SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Reservations of Water for the Environment and Assurances for Existing Legal Sources Consistent with Federal and State Law

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sfwmd.gov

Introduction: Why we are here

- State and Federal Mandates
- State Implementation Tools
- Primary Policy Issues
- Summary and Schedules

Introduction

- **Why we are here**
  - **Present a proposed framework for implementing water reservations and existing legal sources**
  - **March Governing Board received permission to workshop the framework with interested parties, and report back to the Board**
  - **Receive input from WRAC on proposed framework**

Introduction: Why we are here

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State Implementation Tools

Primary Policy Issues

Summary and Schedules

Federal and State Mandates

What is our charge ?

Cecile Ross, Senior Attorney
Office of Counsel

Federal Mandate

Water Resource Development Act 2000

State Mandate

Chapter 373

Water Resources Development Act 2000 (WRDA) Assurance of Project Benefits

- President and Governor Agreement
- Procedural Requirements–Programmatic Regulations, Project Implementation Reports, Project Cooperation Agreements
- Savings Clause

President and Governor Agreement
Executed on January 9, 2002

. . . . State shall ensure, by regulation or other appropriate means, that water made available by each project in the Plan shall not be permitted for a consumptive use or otherwise made unavailable by the State until such time as sufficient reservations of water for the restoration of the natural system are made under State law in accordance with the project implementation report for that project and consistent with the Plan

WRDA
Assurance of Project Benefits
Programmatic Regulations

- Procedures to ensure protection of natural system and other water related needs consistent with goals of CERP
- Procedures for PIR's, PCA's, Interim Goals
- Protocol

WRDA
Assurance of Project Benefits
Project Implementation Reports

- Appropriate quantity, timing and distribution of water managed for the natural system
- Amount of water to be reserved for the natural system

WRDA
Assurance of Project Benefits
Project Cooperation Agreement

- Requires the execution of state water reservations for natural system water ***before*** execution of a project cooperation agreement (PCA)
- Reservation consistent with PIR
- Operating Manuals must be consistent with water reservation

WRDA
Assurance of Project Benefits

"SAVINGS CLAUSE"

No elimination or transfer—until a new source of water supply of comparable quantity and quality as that available on the date of enactment of this act is available to replace the water lost as a result of implementation of the Plan, the Secretary and the non-Federal sponsor shall not eliminate or transfer existing legal sources of water, including those for:

- **(i) an agricultural or urban water supply;**
- **(ii) allocation or entitlement to the Seminole Tribe of Florida;**
- **(iii) the Miccosukee Tribe of Indians of Florida;**
- **(iv) water supply for Everglades National Park; and**
- **(v) water supply for fish and wildlife.**

State Mandates for CERP Implementation

Chapter 373, Florida Statutes

- District local sponsor for projects
- Project must meet all legal responsibilities in Chapter 373, F.S., for water supply, water quality, flood protection, threatened and endangered species and other water or natural resources.

State Mandates for CERP Implementation

- Sets out process for acquiring project approval by Department of Environmental Protection
- Requires identification of increases in water supplies from a project component
- Requires allocation or reservation of increased water supplies under State law

State Mandates for CERP Implementation

§ 373.1501(5)(e), F.S.

SFWMD must:

"provide reasonable assurances that the quantity of water available to existing legal users will not be diminished by implementation of project components so as to adversely impact existing legal users . . ."

Introduction: Why we are here

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State Implementation Tools

- Consumptive use permitting
- Water reservations
- Water shortage plan
- Minimum flows and levels and recovery and prevention strategies

Consumptive Use Permits

- All water users required to get a permit or be exempt as domestic use = "existing legal uses"
- Right to use water is not a "property right”
  - Defined by a permit for a finite duration—permits expire
  - Upon expiration user must re-establish right based on updated conditions for issuance
- Conditions for permit issuance designed to protect water resources from harm up to drought condition

Water Reservations
(§373.223(4), F.S.)

"The governing board or the department, by regulation, may reserve from use by permit applicants, water in such locations and quantities, and for such seasons of the year, as in its judgment may be required for the protection of fish and wildlife or the public health and safety. Such reservations shall be subject to period review and revision in the light of changed conditions. However, all presently existing legal uses of water shall be protected so long as such use is not contrary to the public interest."

Reservation of Water

- Used as a condition for permit issuance
- Incorporated into water shortage plan and operations

Reservation of Water

Consumptive use protections when establishing reservations:

- **State law protects "existing legal use" insofar as the use is not contrary to the public interest**
  - **Public interest determined by the Governing Board**

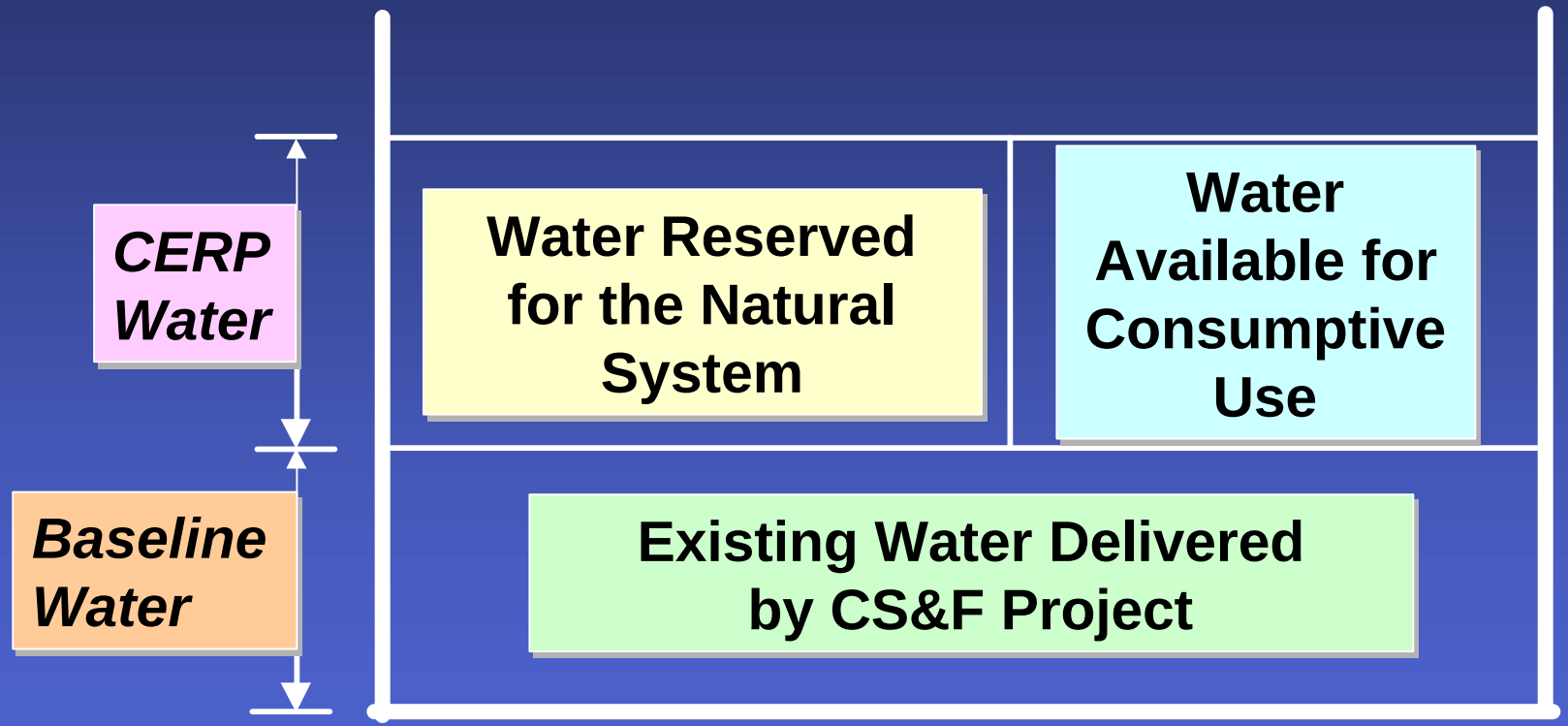
Minimum Flows and Levels

- Tool to help prevent significant harm to the water resources
- Recovery and prevention plans approved by Governing Board
- Additional permit allocations limited to allow recovery of MFL
- Established for Everglades National Park, Water Conservation Areas, Lake Okeechobee, Caloosahatchee River, and Biscayne Aquifer

Water Shortage Plan

- Identifies process for managing water supplies during droughts
- Temporary cutbacks on water uses imposed based on severity of drought, potential for environmental harm and potential for impacts caused by consumptive use withdrawals
- Incorporates minimum flows and levels and water reservations

Identifying Water Made Available by CERP




Discussion

Introduction: Why we are here

State and Federal Mandates:

State Implementation Tools

Primary Policy Issues

Summary and Schedules

Primary Policy Issues

I. How to define and protect ***existing*** legal sources of water for natural systems & other water related needs

II. How to protect ***water made available by CERP*** for natural systems & other water related needs

I. How to define and protect existing legal sources of water for natural systems & other related needs

- **Major Topics:**

A. Define existing legal sources

B. Define 12/2000 Pre-CERP baseline conditions

C. Quantify existing legal sources of water

- Pre-CERP baseline

D. Protect existing legal sources

- Consider during CERP design & implementation
- Develop Regional Water Availability rule
- Develop Rainfall Driven Reservation rule

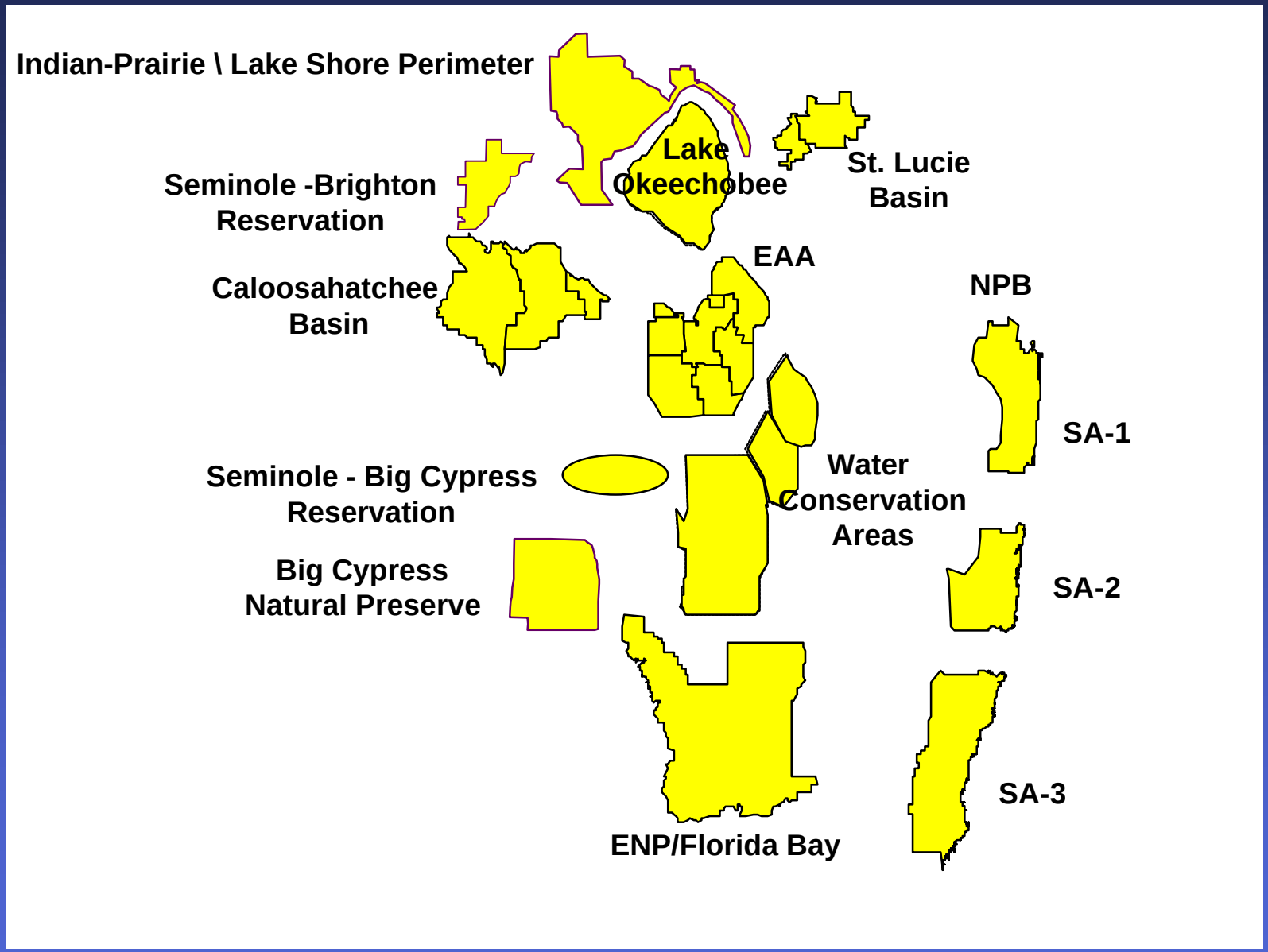
I.A. What are existing legal sources?

- WRDA 2000 Savings Clause
  - Existing legal source protection
  - Consider during CERP implementation
  - Must have replacement source of comparable quality and quantity
  - Make up prior to elimination or transfer

I.A. What are existing legal sources?

- The quantity of water available from all locations of which there was a dependence as of December 2000, consistent with Federal and State law for: 1) urban and agricultural existing legal uses, including those uses exempt from permitting requirements; 2) non-consumptive uses, including regional surface water deliveries and groundwater seepage for resource protection; 3) meeting the entitlement rights of the Seminole Tribe of Florida; 4) the Miccosukee Tribe; 5) federal and state requirements for Everglades National Park; and 6) protection of fish and wildlife.

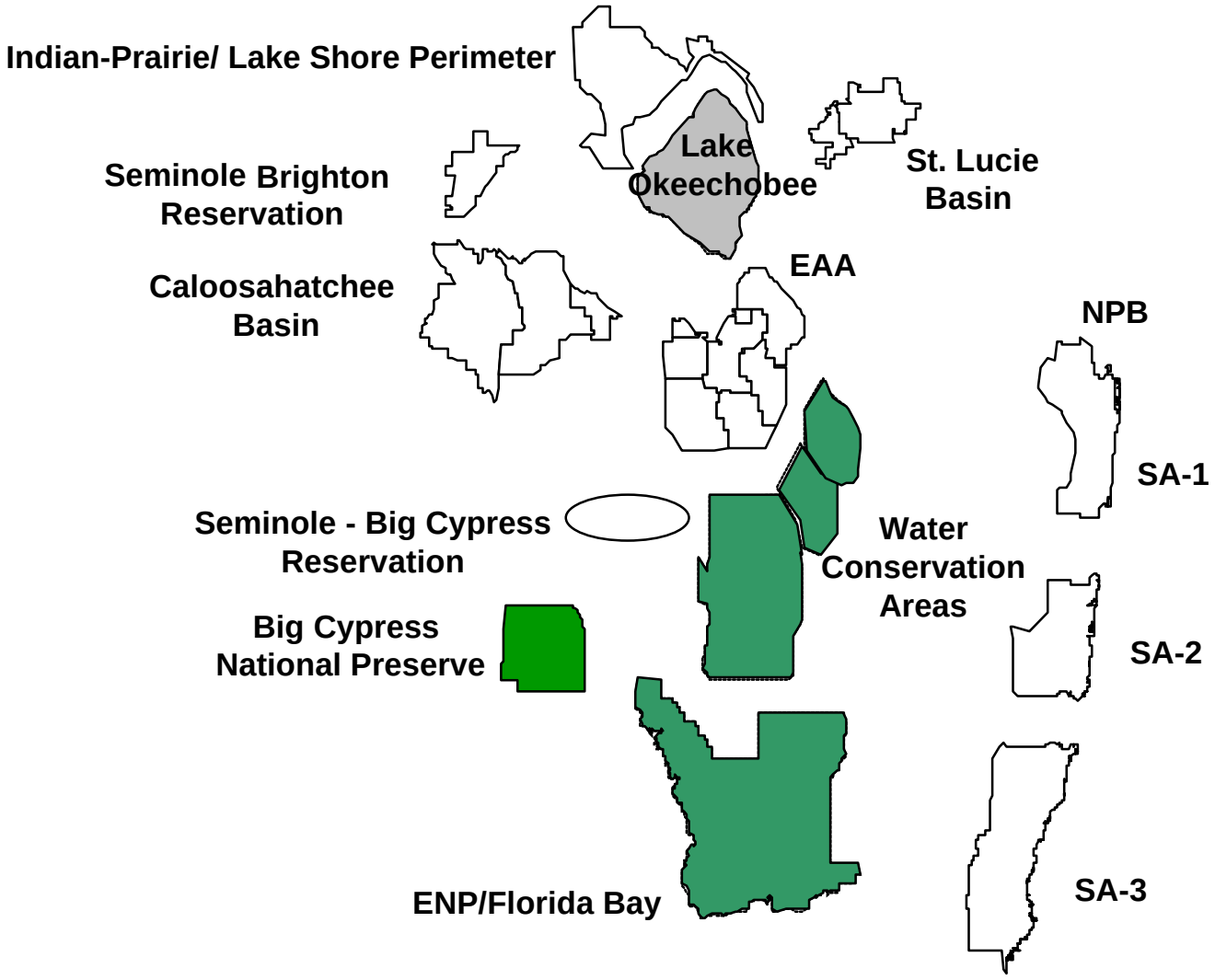
Proposed Existing Legal Source User Basins



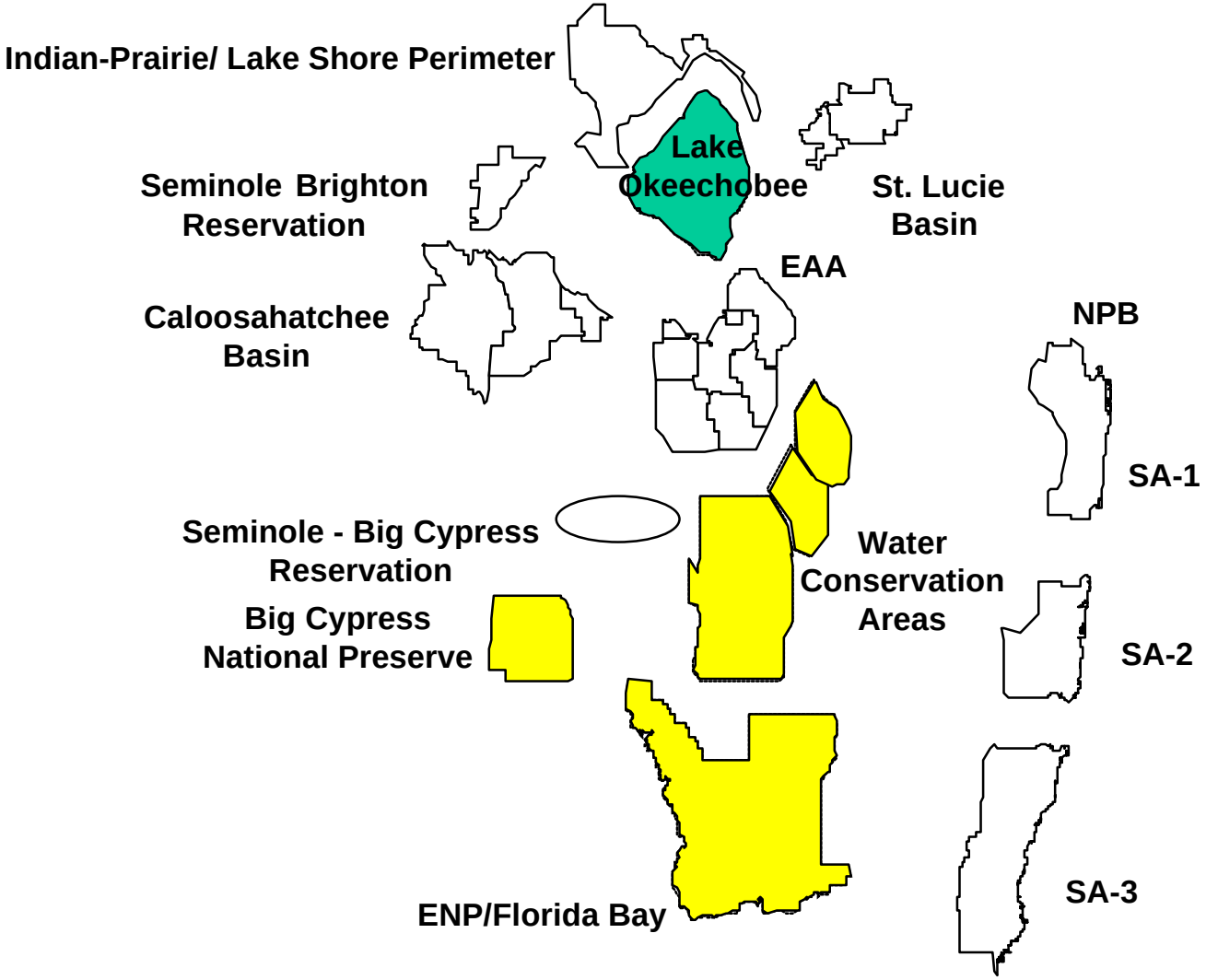
I.A. What are existing legal sources? (con't)

- Existing Legal Sources include:
  - Primary, secondary & tertiary sources
    - Local rainfall, storage and delivered quantities
  - Non-consumptive use supplies for resource protection, including regional deliveries for saltwater intrusion, wetland protection, canal recharge
  - Applies in all hydrologic conditions
  - Excludes regional water to tide

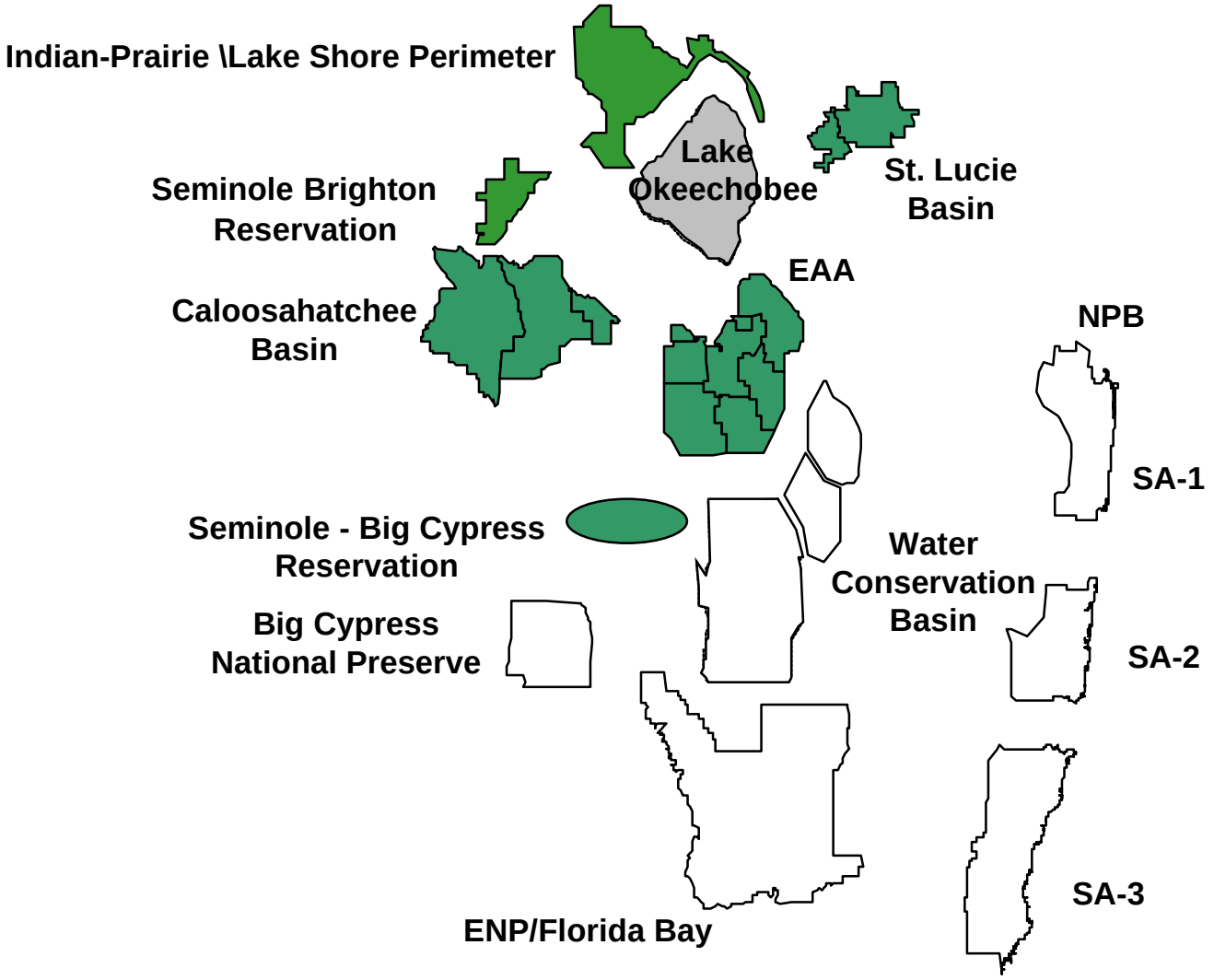
Environmental Water Supply- Primary Source (Fish and Wildlife Protection)



Environmental Water Supply- Secondary Source (Fish and Wildlife Protection)



Lake Okeechobee Service Area Agricultural Water Supply Sources



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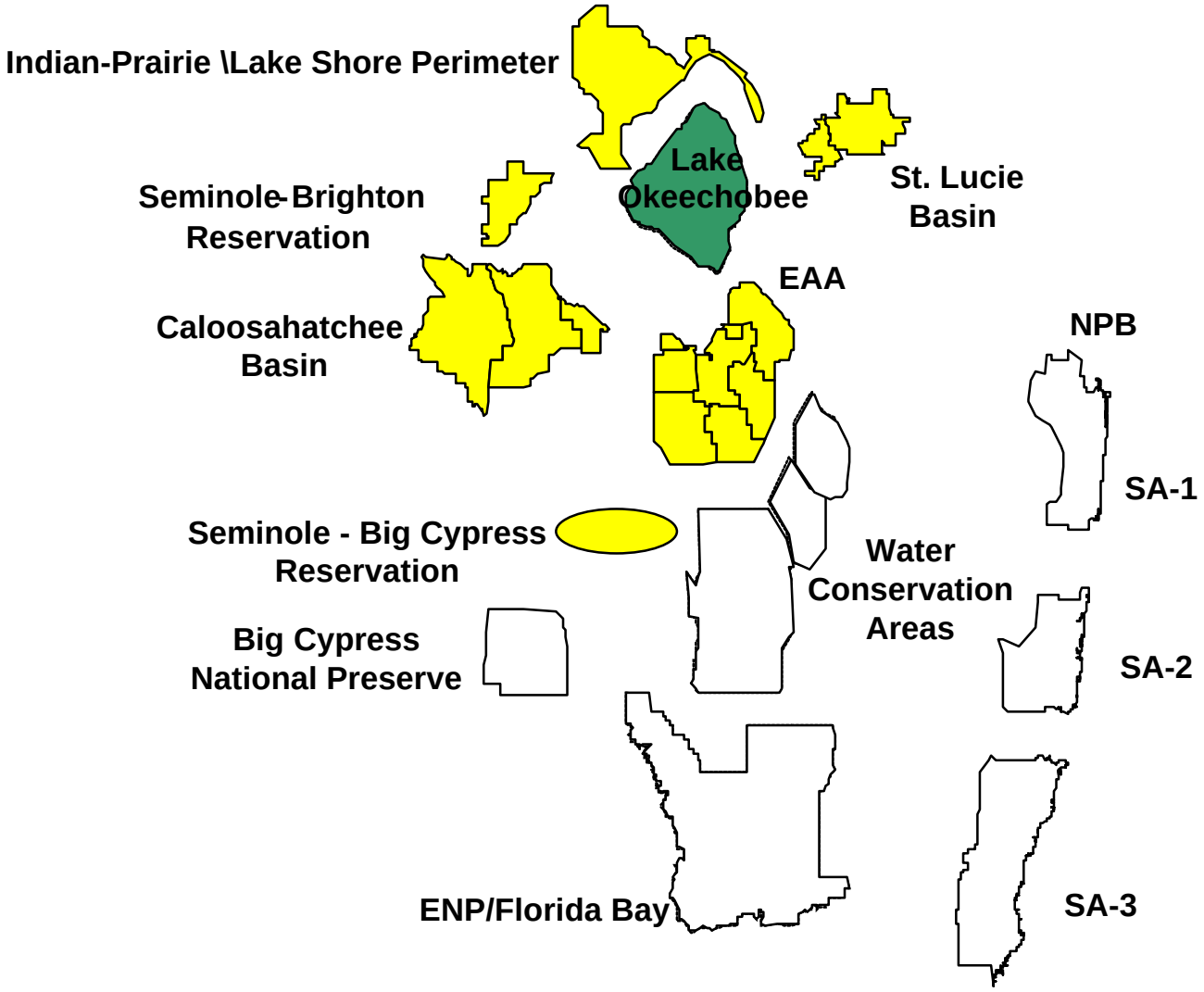
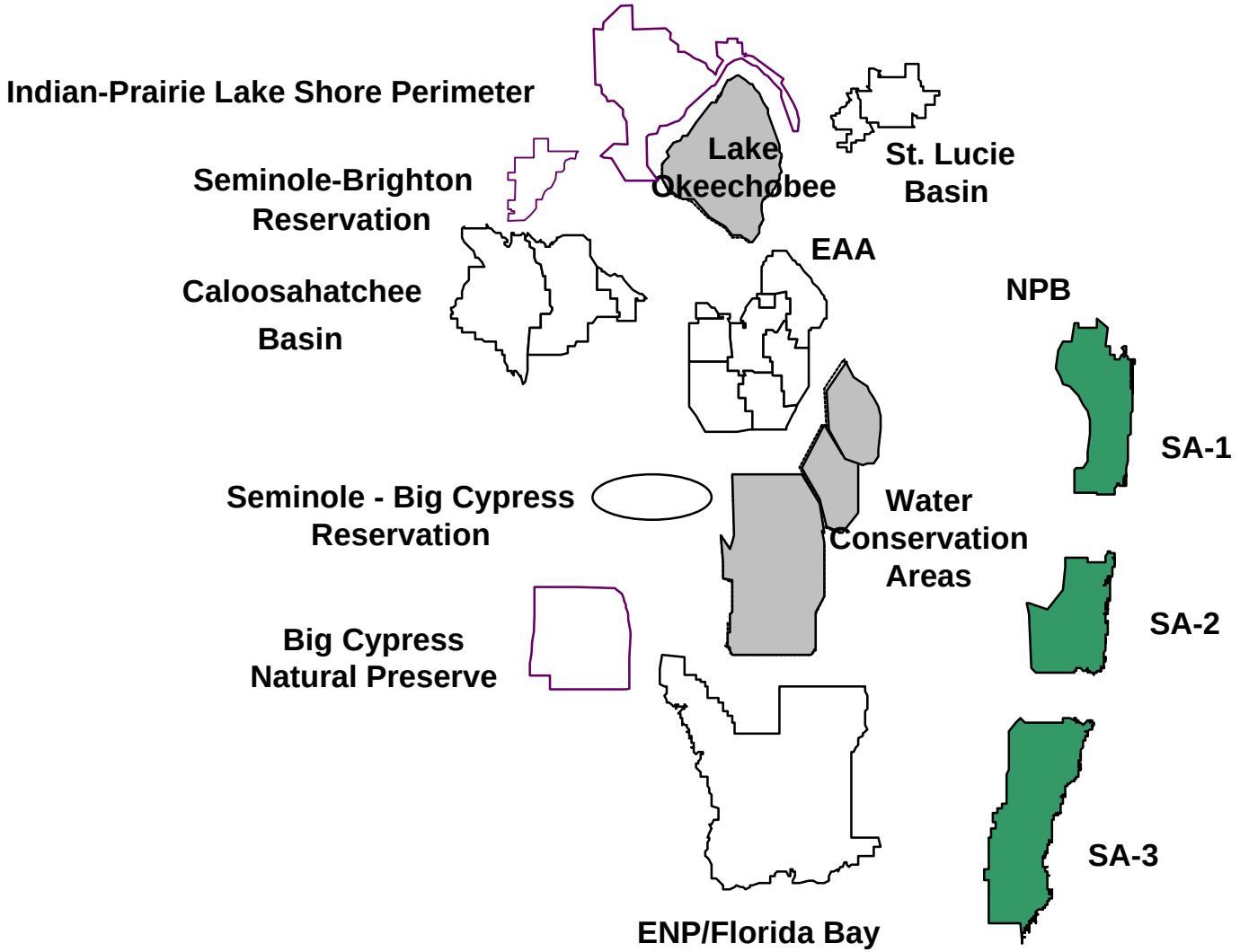
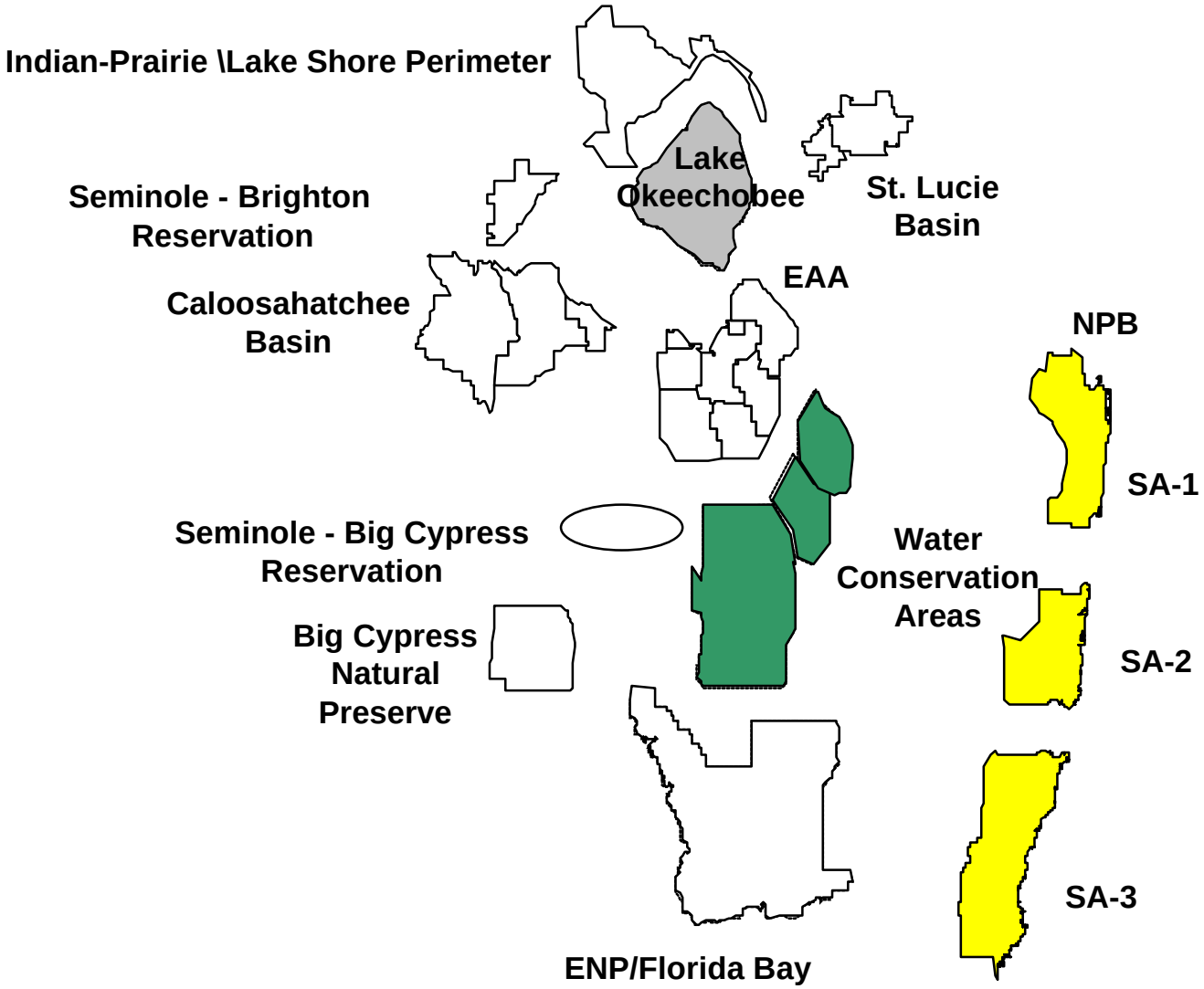


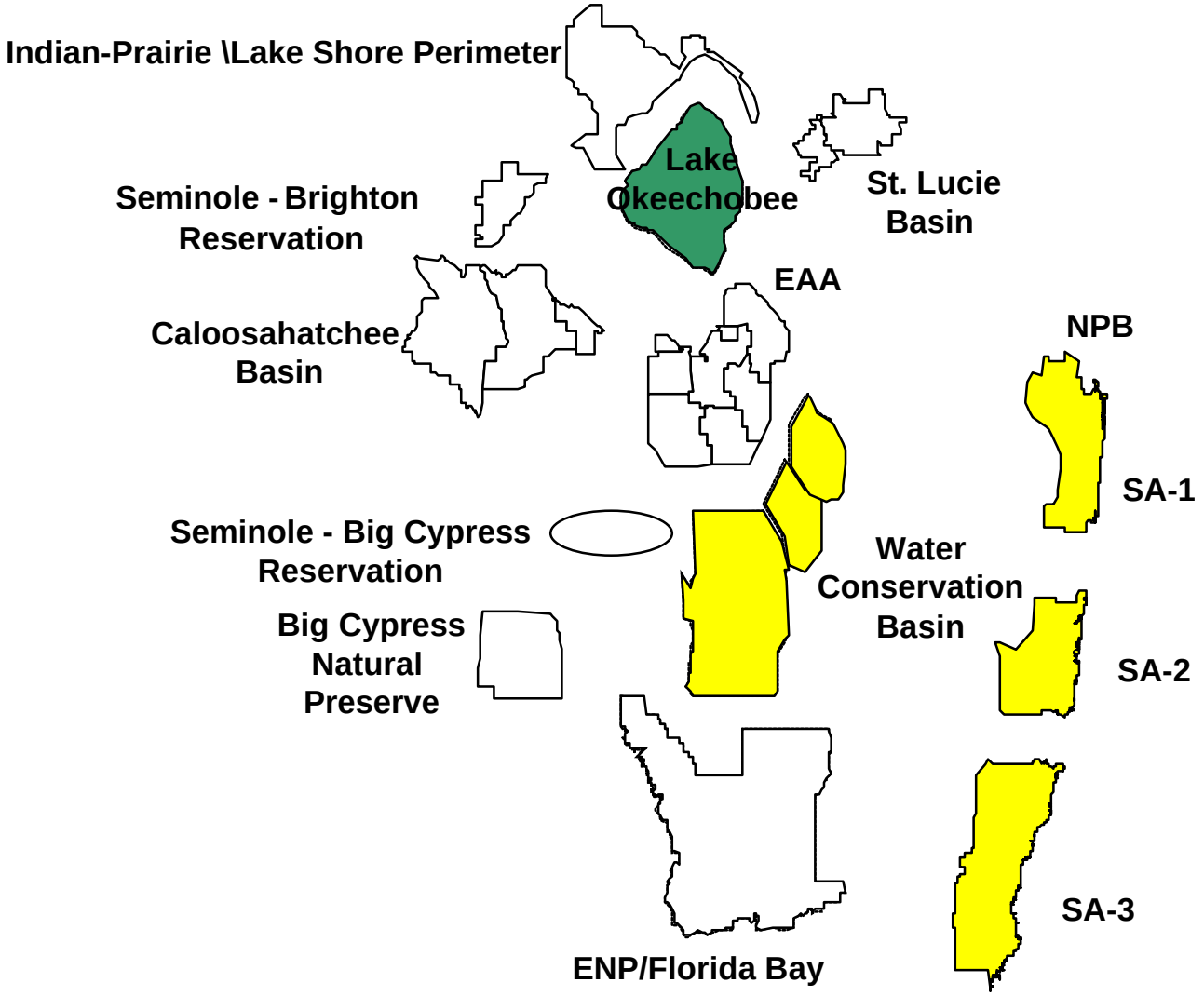
Lower East Coast Service Area-Primary Source



Lower East Coast Service Area- Secondary Source



Lower East Coast Service Area- Tertiary Source



I.B. Define 12/2000 Pre-CERP Baseline Conditions

Why is the Pre-CERP Baseline Needed?

- Provides basis for quantifying existing legal sources
- Provides basis for determining if existing legal sources have been eliminated or transferred (Savings Clause provision)
- Provides basis for quantifying water made available by CERP
- Provides basis for CUP Regional Water Availability
- Required by Programmatic Regulations

I.B. Define 12/2000 Pre-CERP Baseline Conditions

Assumptions for Pre-CERP Baseline

- Regional model assumption on 12/2000
- Population
- Land Use
- Natural Area Land Cover
- Urban, Agricultural, and Tribal Water Demands
- Physical Facilities and Operations
  - Region-Wide
  - Lake Okeechobee Service Area
  - Water Conservation Areas
  - Lower East Coast Service Area
  - Western Basins and Big Cypress National Preserve
  - Everglades National Park and Florida Bay

I.B. Define 12/2000 Pre-CERP Baseline Conditions

Guiding Principles for Defining the Pre-CERP Baseline

- General System-wide/Regional Conditions
- Hydrologic Conditions
- Physical Conditions/Structures
- Operational Conditions
- Supply/Source Conditions
- Demand Conditions

General System-wide/Regional Conditions

- General Principle: Conditions based on assumptions in 1999 Restudy and 1995 base case of LECRWSP updated to 12/2000 conditions

  Issue: Deviations or exceptions must be explicitly defined

Hydrologic Conditions

- General Principle: Rainfall and evapotranspiration based on regional hydrologic conditions from 1965 through 2000

Physical Conditions / Structures

- **General Principle: Structures and projects in existence as of 12/2000 will be accounted for**

  Issue: **How to address certain projects not constructed/operational in 12/2000, but federally authorized or state mandated as of that date (e.g., C-111, Modified Water Deliveries, STA's 1 East and 3/4)**

Operational Conditions

- General Principle: Operations in place as of 12/2000 will be assumed

  Issue: How to address certain operations considered "experimental", or under legal review, or development as of 12/2000 (e.g., ENP sparrow issue, ISOP, IOP, CSOP, S-9 litigation, ENP experimental water deliveries, 1983 delivery authorizations, etc.)

Supply/Source Conditions

- General Principle: Primary regional sources of available water include, local rainfall, surface storage and runoff, Biscayne aquifer and other groundwater, WCA surface water deliveries and seepage, and Lake Okeechobee deliveries
- General Principle: Sources for large basins including, urban and agricultural service areas, and regional environmental areas should be identified
- General Principle: Basins may have primary, secondary, and tertiary supply sources as a function of hydrologic conditions and available storage

Demand Conditions

- **General Principle: Urban and agricultural demands based on amount of water necessary to meet reasonable needs**

  ***Issue*: Urban demands - actual withdrawals vs. amount permitted as of 12/2000**

  Agricultural demands - actual crop acreage permitted vs. actual acreage irrigated as of 12/2000

  ***Issue*: Blaney-Criddle vs. Agricultural Field Scale Irrigation Requirements (AFSIRS) for estimating irrigation demand requirements**

Demand Conditions (con't)

- General Principle: Non-consumptive uses in urban and agricultural service areas will be accounted for as demands
- General Principle: Fish and wildlife demands based on historic operational deliveries (e.g., federal regulation schedules, and deliveries for beneficial uses)

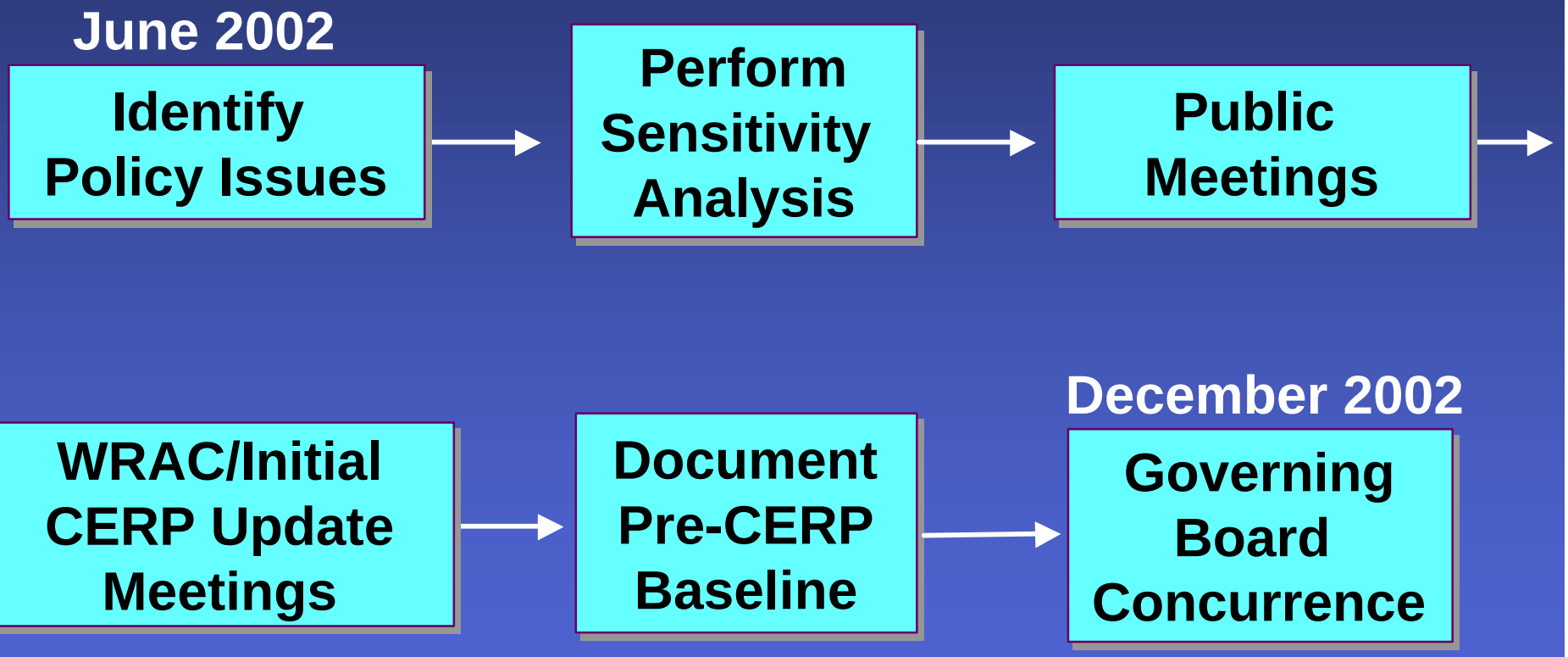
I.B. Define 12/2000 Pre-CERP Baseline Conditions

Sensitivity Modeling Runs

- Permitted vs. Actual
  - Urban wellfield pumpages
  - Agricultural water demand
  - Tribal work plan authorization
- Current operations vs. ENP base 1983
- Authorized projects vs. completed projects

I.B. Define 12/2000 Pre-CERP Baseline Conditions

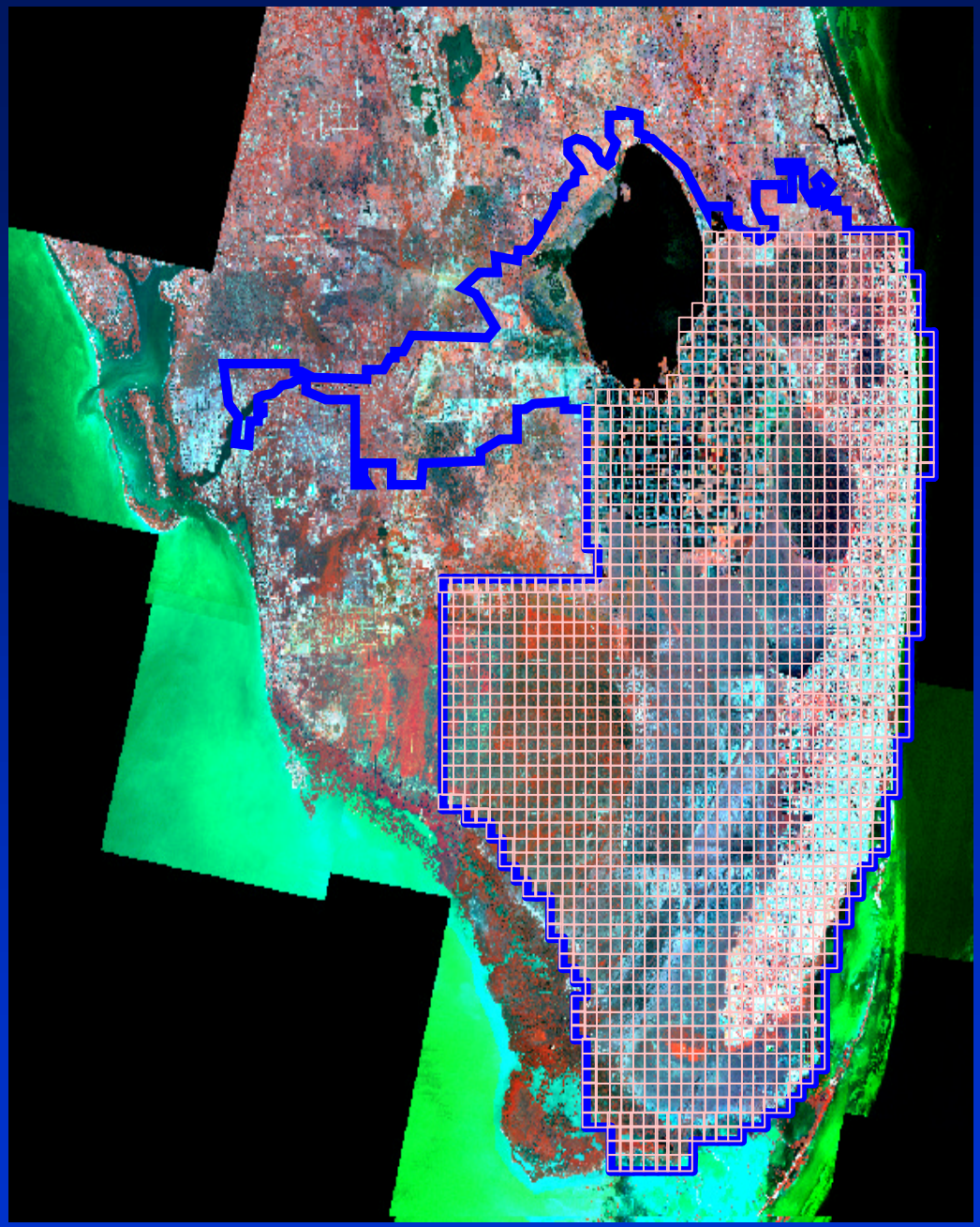
How will the Pre-CERP Baseline be defined?



I.C. How will existing legal sources be quantified?

- **Regional Modeling:**
  - **Pre-CERP Baseline**
  - **Simulate performance of the system using the SFWMM under full 36 years of historical rainfall conditions (1965-2000)**
  - **Quantify volume available to existing legal source basin under all rainfall conditions**

SFWMM Boundary & Grid

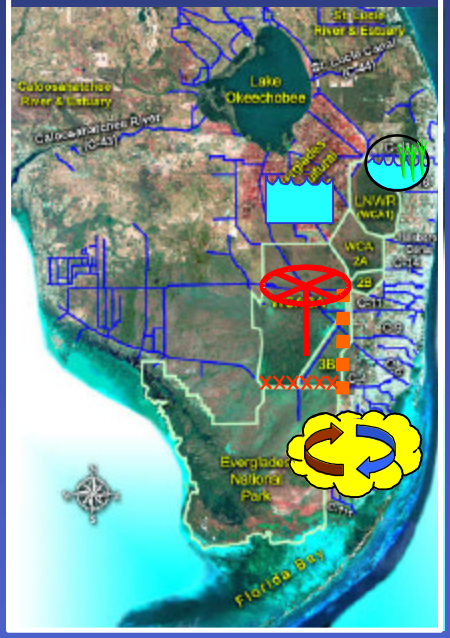


Modeling Approach

SFWMM Model

- Climatic Input
  - Rainfall
  - ET
- Boundary Conditions

Baseline Or Scenario

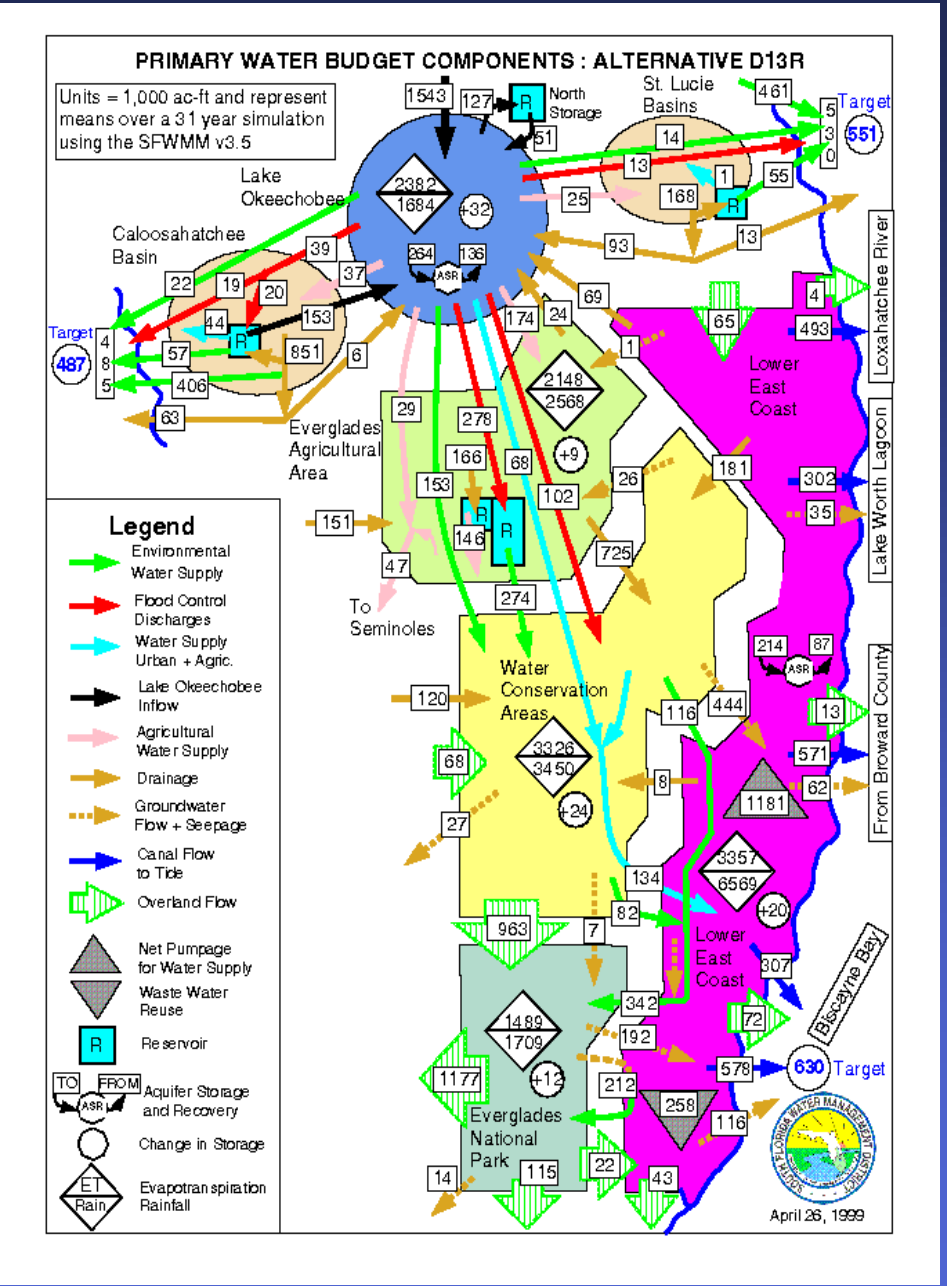


- Landuse/Landcover
- Water Demands
- Operating Criteria

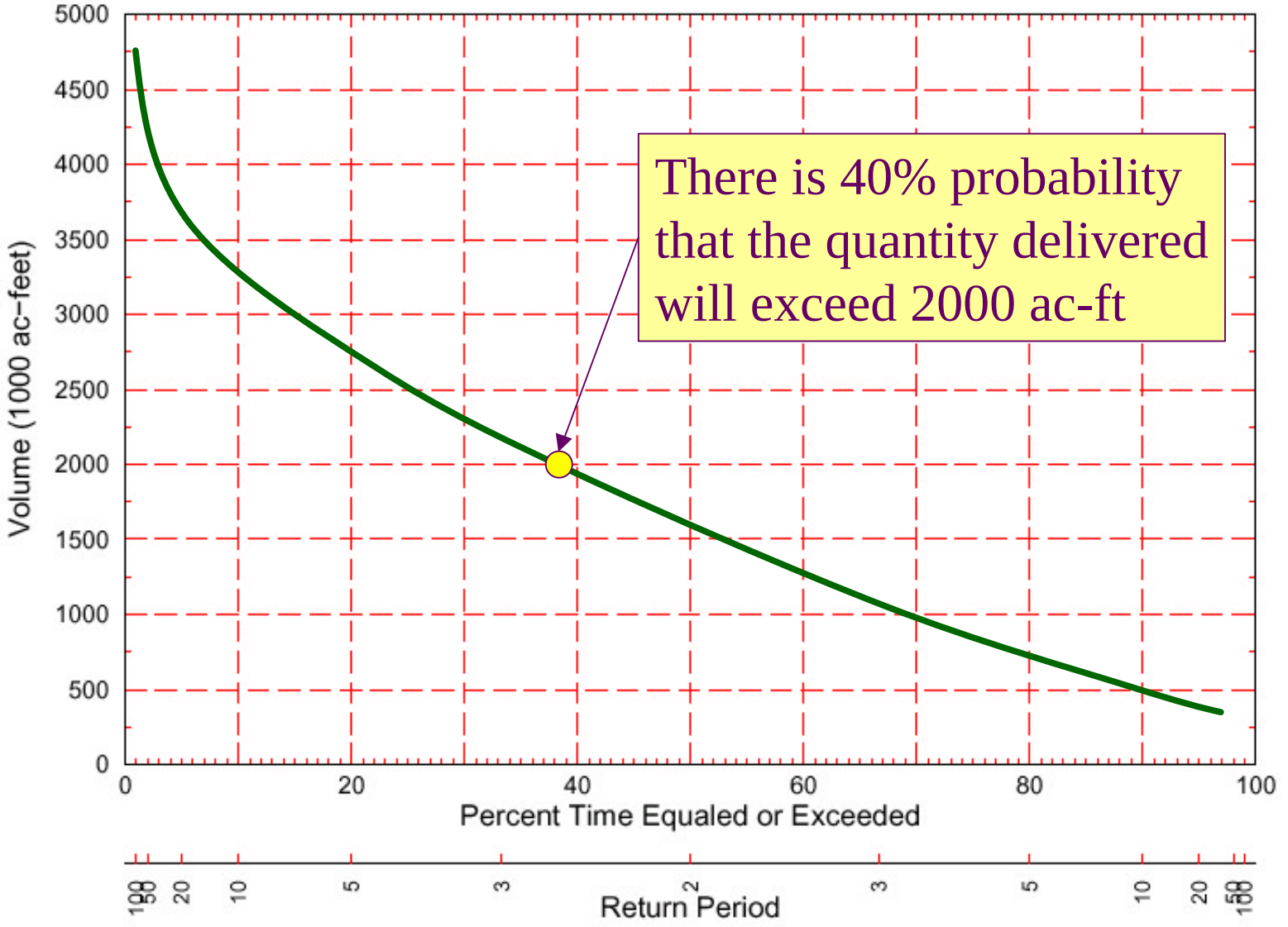
Model Output

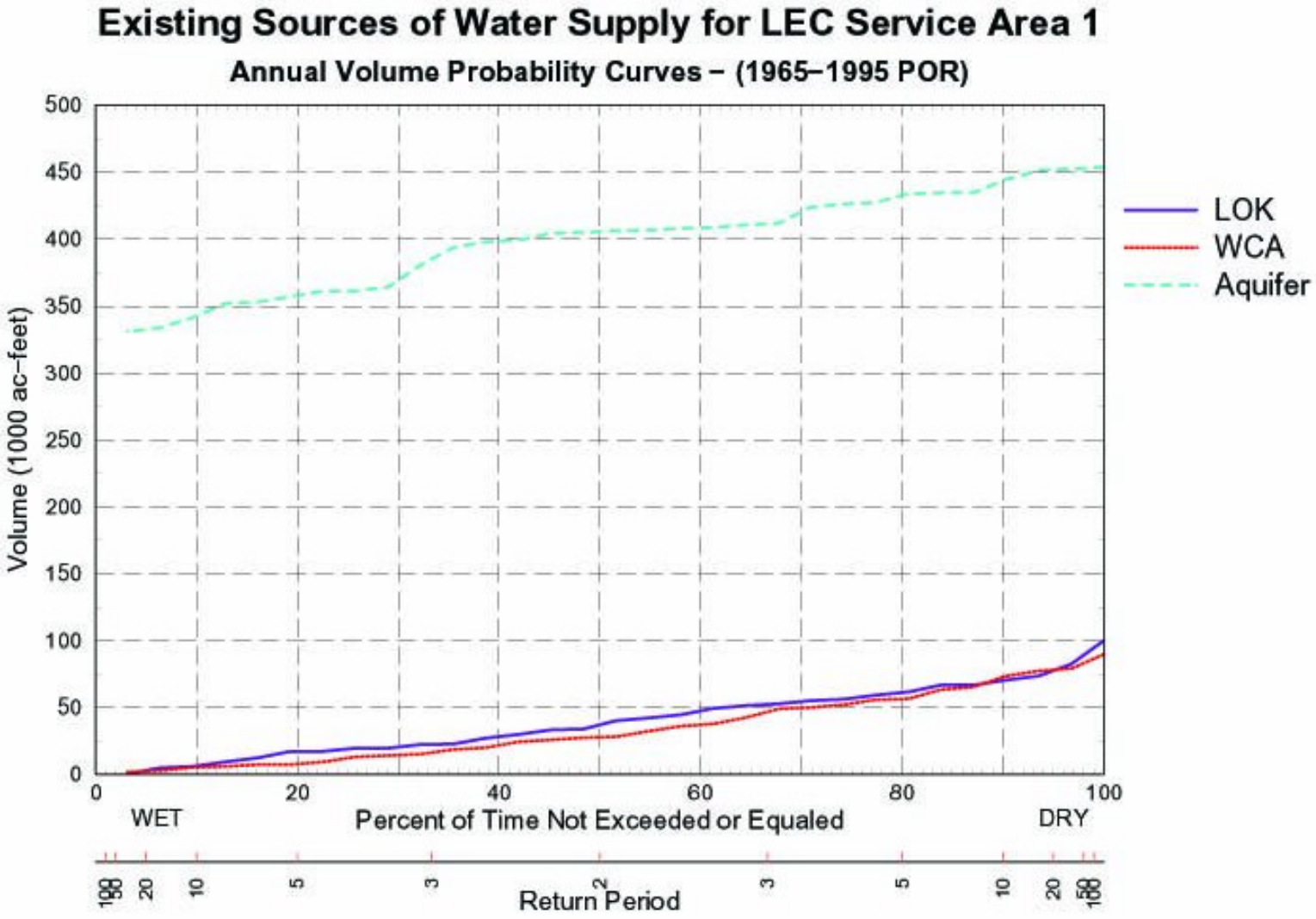
- Daily time series of water levels, flows
- Demands not met

SFWMM Model produces detailed water budgets



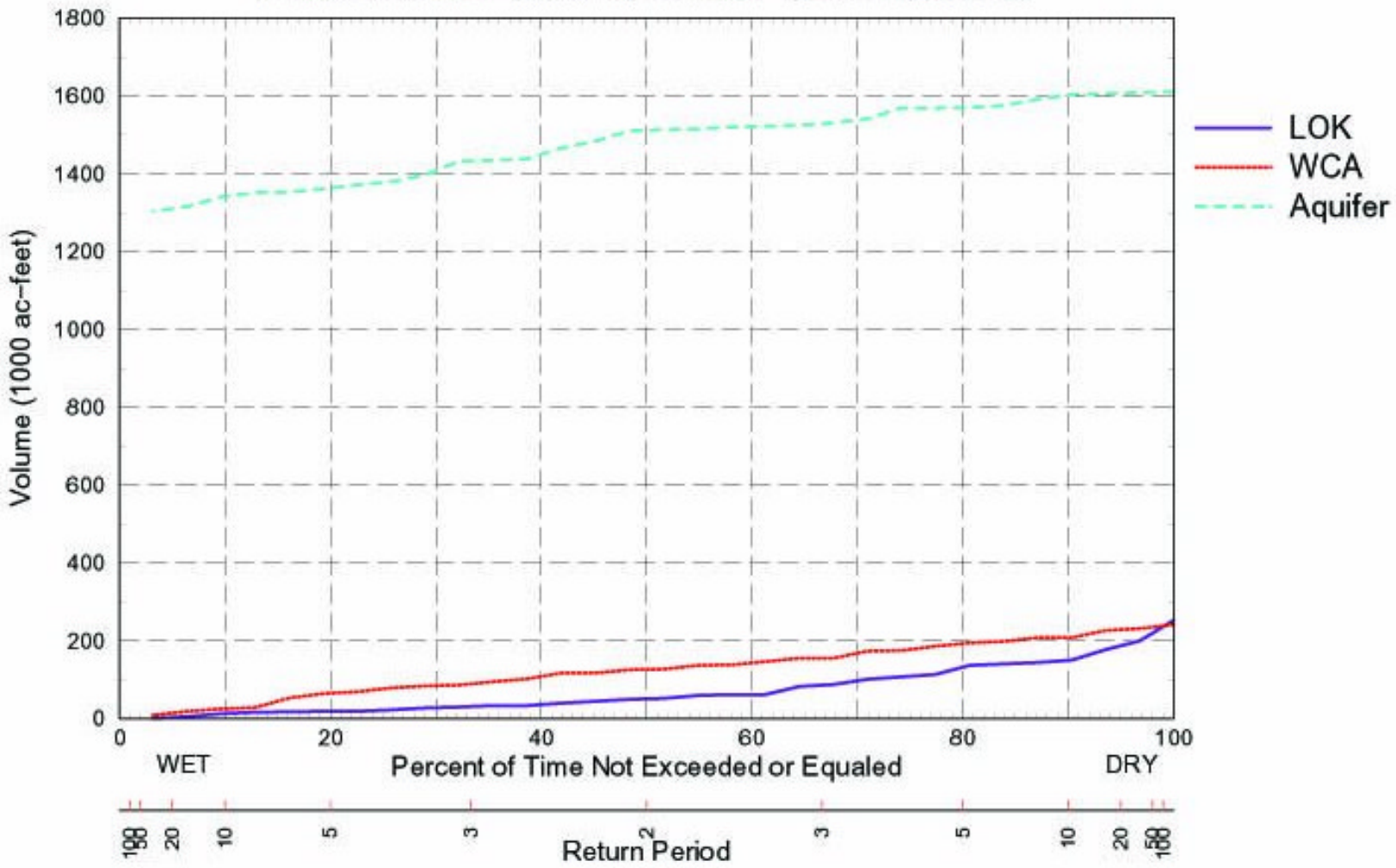
Volume-Probability Curve




Existing Sources of Water Supply for LEC Service Area 1
Annual Volume Probability Curves – (1965–1995 POR)
Volume (1000 ac-feet)
500
450
400
350
300
250
200
150
100
50
0
0
20
40
60
80
100
WET
Percent of Time Not Exceeded or Equaled
DRY
Return Period
LOK
WCA
Aquifer

Existing Sources of Water Supply for LEC Service Areas

Annual Volume Probability Curves – (1965–1995 POR)



I.D. How will existing legal sources be protected?

(1) Protect existing legal sources during CERP design and implementation:

- Existing legal source curves considered when designing each PIR
- Source curves cannot be reduced by a CERP project through full range of hydrologic conditions, or
- Source shift must be documented in the PIR
  - Source shift cannot occur until replacement water is made available and only after project is constructed, tested and operated

I.D. How will existing legal sources be protected? (con't)

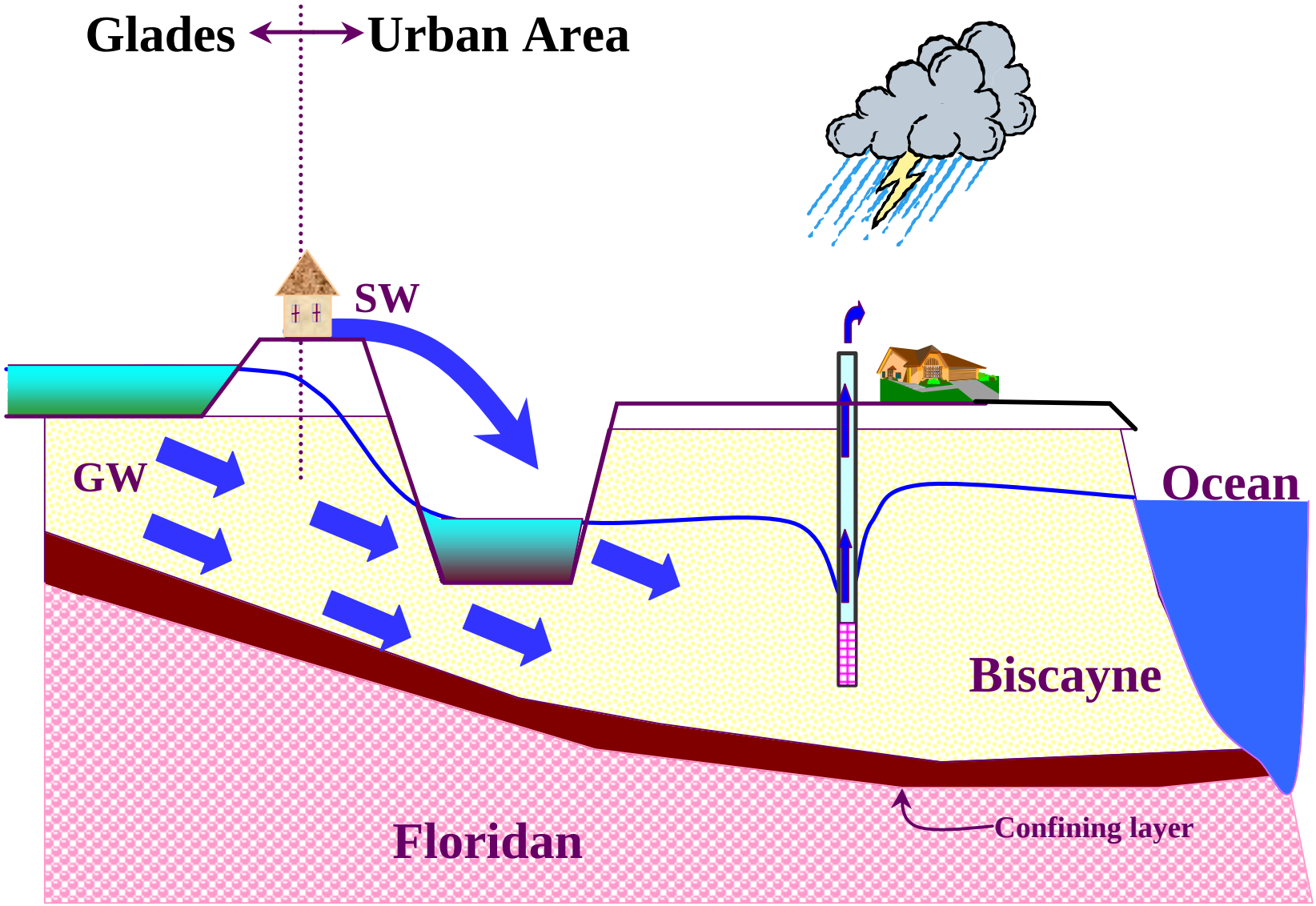
(2) Develop Regional Water Availability Rule:

- To protect the Everglades ecosystem from harm by identifying available regional water for future consumptive uses in the Lower East Coast
- Boundary condition from regional system until new water becomes available
- Will not eliminate or transfer any existing legal source or impact any existing legal use

I.D. How will existing legal sources be protected? (con't)

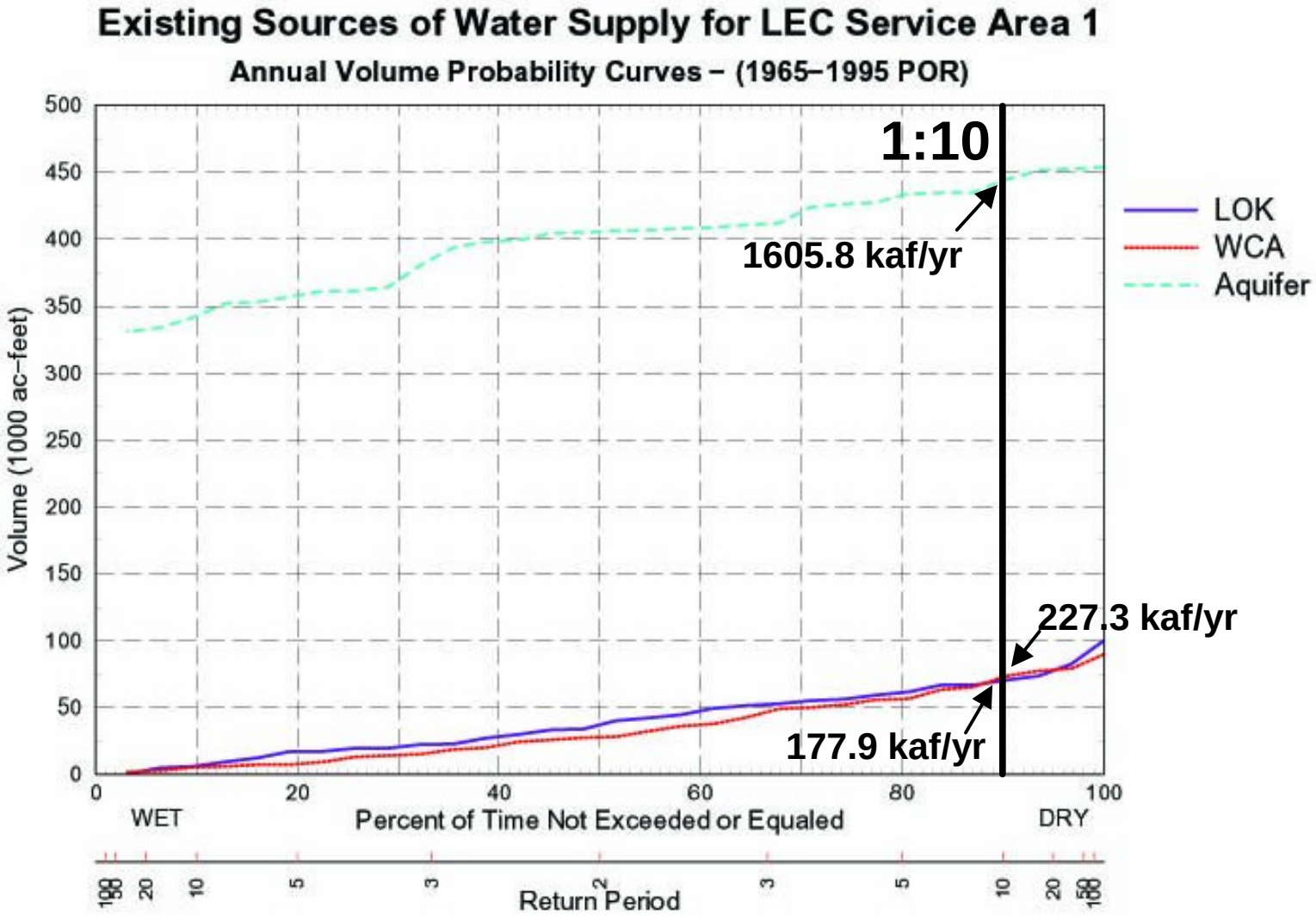
- **The Regional Water Availability rule will be:**
  - **Expressed as a model boundary condition representing water entering service areas from regional system under a 1 in 10 drought condition**
    - **Surface water discharge to major canals**
    - **Ground water seepage through levees**
    - **Excludes excess regional water to tide**

Regional Water Availability



I.D. How will existing legal sources be protected? (con't)

- **How the Regional Water Availability rule will be used in the Consumptive Use Permitting process:**
  - **Maintain accounting ledger as each new consumptive use permit is reviewed which draws surface or groundwater from the regional system**
  - **Cumulative analysis of all existing permits plus new application**
  - **Adopt as rule in 2003**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Annual Volume Probability Curves – (1965–1995 POR)
Volume (1000 ac-feet)
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200
150
100
50
0
1:10
1605.8 kaf/yr
227.3 kaf/yr
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LOK
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Aquifer
0
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60
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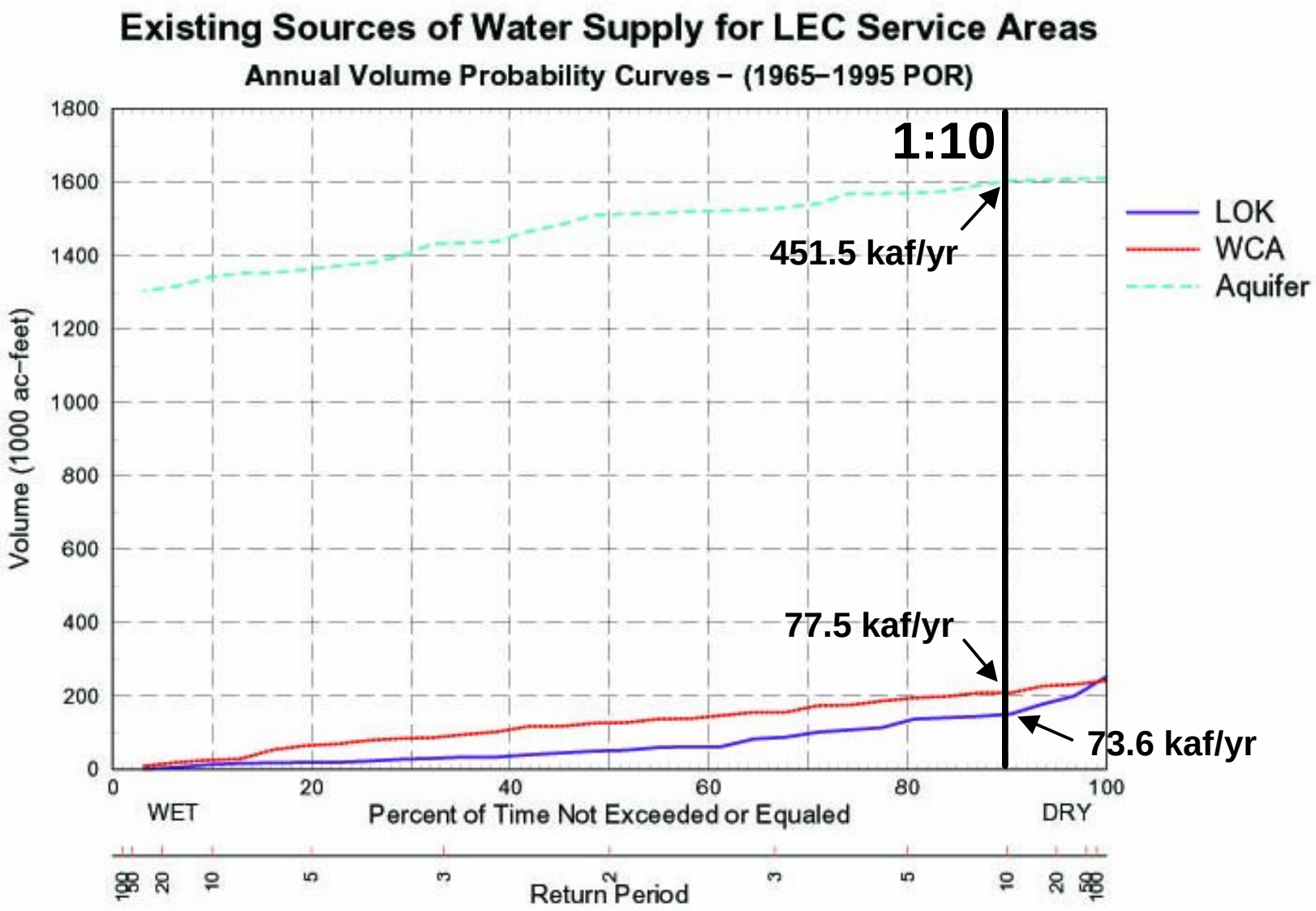
Percent of Time Not Exceeded or Equaled
DRY
Return Period


Existing Sources of Water Supply for LEC Service Areas
Annual Volume Probability Curves – (1965–1995 POR)
Volume (1000 ac-feet)
1800
1600
1400
1200
1000
800
600
400
200
0
1:10
451.5 kaf/yr
77.5 kaf/yr
73.6 kaf/yr
LOK
WCA
Aquifer
0
20
40
60
80
100
WET
Percent of Time Not Exceeded or Equaled
DRY
Return Period
100
50
20
10
5
3
2
3
5
10
20
50
100

I.D. How will existing legal sources be protected? (con't)

- Total water available to consumptive and non-consumptive uses in a basin is defined as:
  - Regional water availability PLUS:
    - Local storage (ground and surface water)
    - Local runoff (water to tide)
    - Alternative water supplies
    - Water made available by conservation

I.D. How will existing legal sources be protected? (con't)

(3) Develop Rainfall Driven Reservation rule:

- Identify enhanced distribution of "existing legal source" water for natural systems:
  - Distribution based on revised rainfall driven operations for Everglades National Park
  - New rainfall driven operations for Everglades Protection Area (EPA)
  - Deliveries based on NSM-like targets
  - Considers existing system constraints

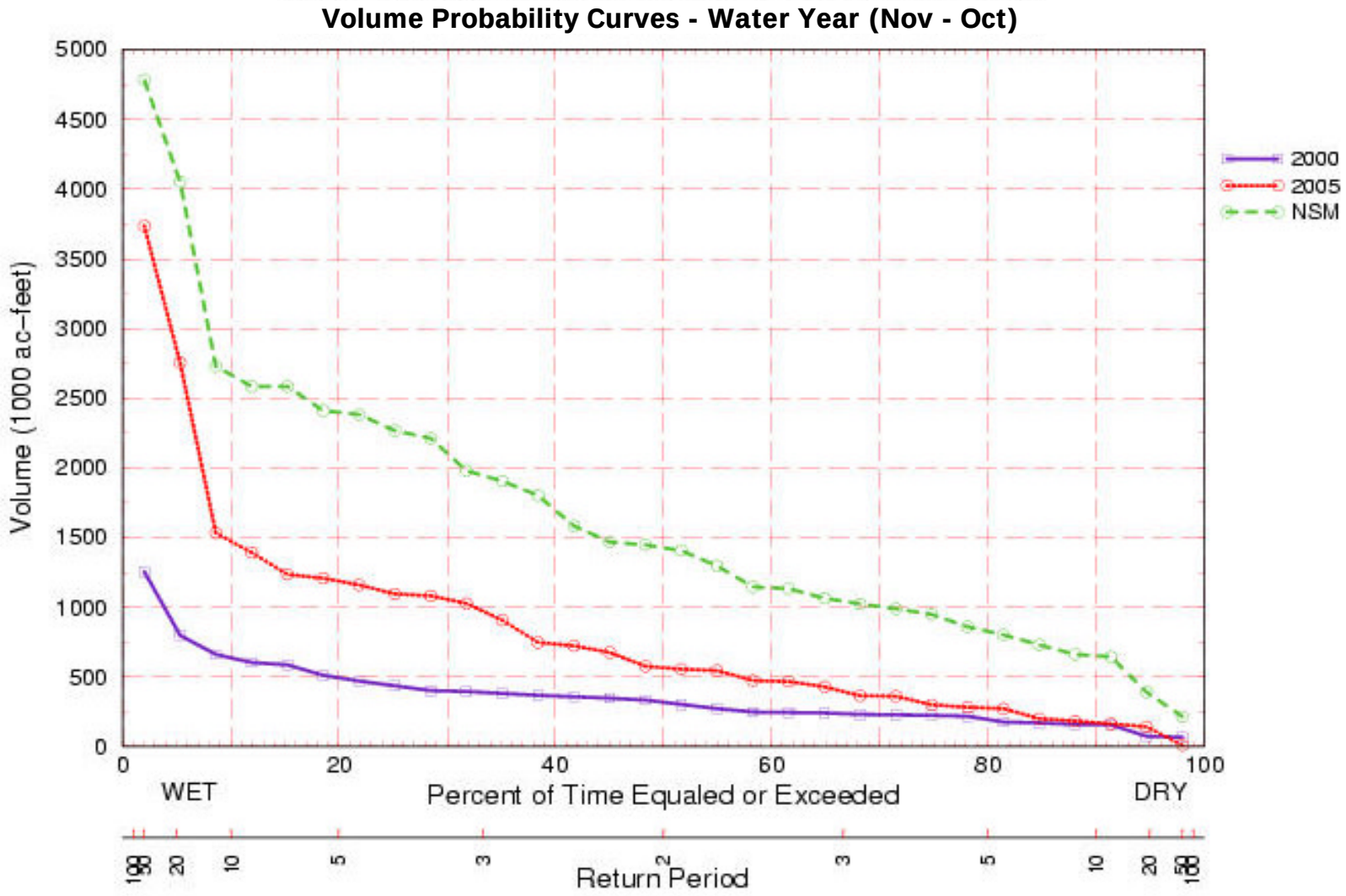
I.D. How will existing legal sources be protected? (con't)

- **Develop Rainfall Driven Reservation rule (con't):**
  - Reserved quantity not to exceed CERP 2000 existing legal source water for natural systems
  - No impact on "existing legal sources" or other uses
  - Base for future CERP reservations
  - Adopt as rule in 2004 prior to basin renewals of consumptive use permits

I.D. How will existing legal sources be protected? (con't)

- The Rainfall Driven Reservation will be defined as:
  - A volume delivered to the EPA to meet NSM-like targets, excludes regulatory discharges
  - Defined under all hydrologic conditions, including droughts
  - Volume probability relationship
  - Geographically specific by sub-basin

Example of Rainfall Driven Reservation to Everglades National Park



SFWMM P.O.S. 1965 – 1995
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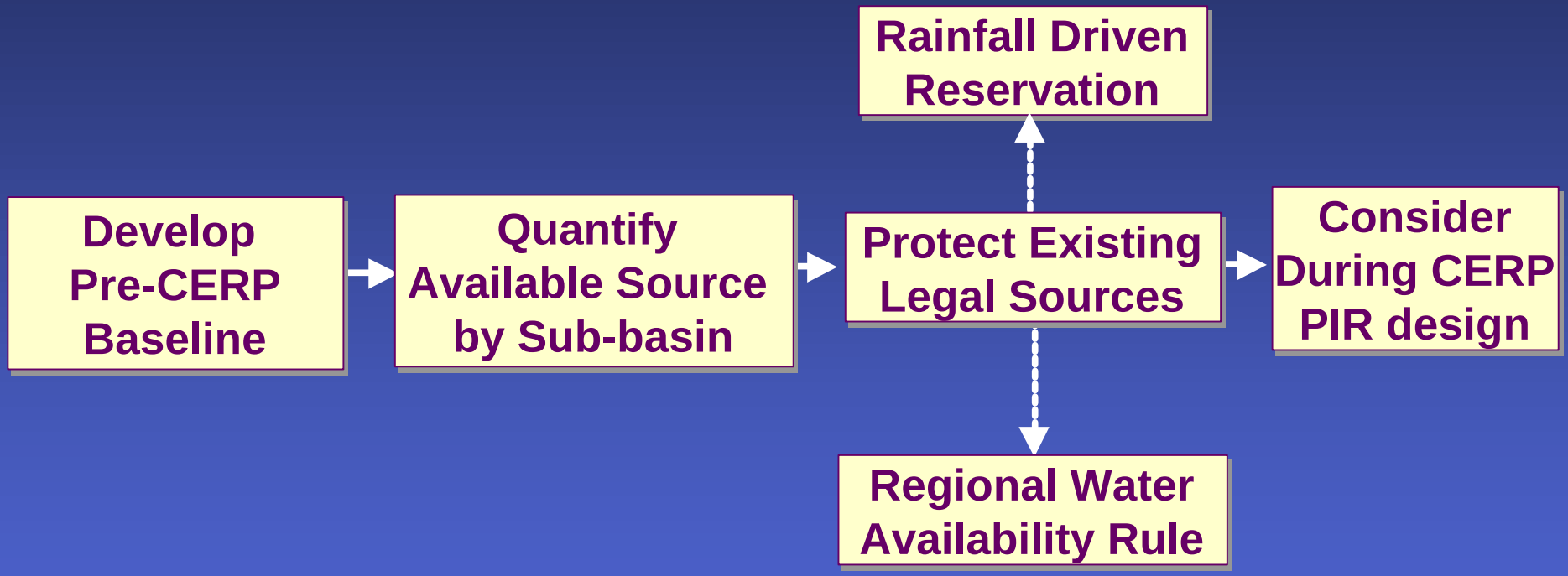
Summary

I. How to protect existing legal sources of water for natural systems & other related needs

- **Major Topics:**
  - **A. Define existing legal sources**
  - **B. Define 12/2000 Pre-CERP baseline conditions**
  - **C. Quantify existing legal sources of water**
    - **Pre-CERP baseline**
  - **D. Protect existing legal sources**
    - **Consider during CERP design & implementation**
    - **Develop Regional Water Availability rule**
    - **Develop Rainfall Driven Reservation rule**

Conceptual Process for Protecting Existing Legal Sources




Discussion

Primary Policy Issues

I. How to define and to protect existing legal sources of water for natural systems and other water related needs

II. How to protect water made available by CERP for natural systems & other water related needs

II. How to protect water made available by CERP for natural systems & other water related needs

- **Major Topics:**

A. Identify water made available by each CERP project for natural systems and consumptive uses

B. Adopt reservation to account for additional water made available for the natural system prior to PCA

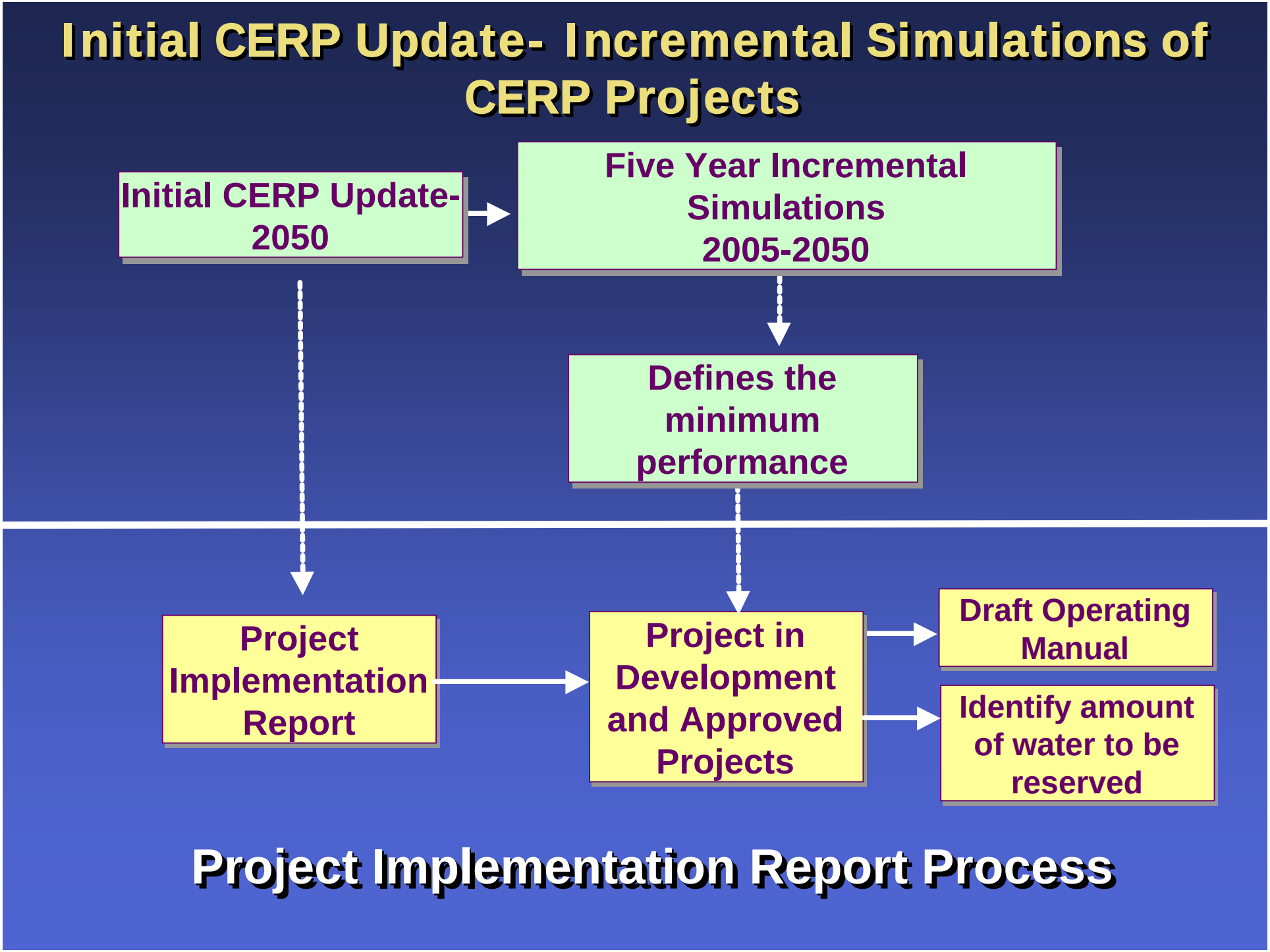
C. Revise regional water availability rule to account for additional water made available for consumptive uses

D. Develop linkage to water shortages and operations

II. A. Identify water to be made available by each CERP project for natural systems and consumptive uses

- Identify water for natural systems and other water related needs consistent with goals and objectives of CERP through time
- Five year incremental modeling of the CERP update will define minimum performance through time
- Initial goal is to provide for incremental benefits to the natural system, agriculture, and urban water supply

Initial CERP Update- Incremental Simulations of CERP Projects

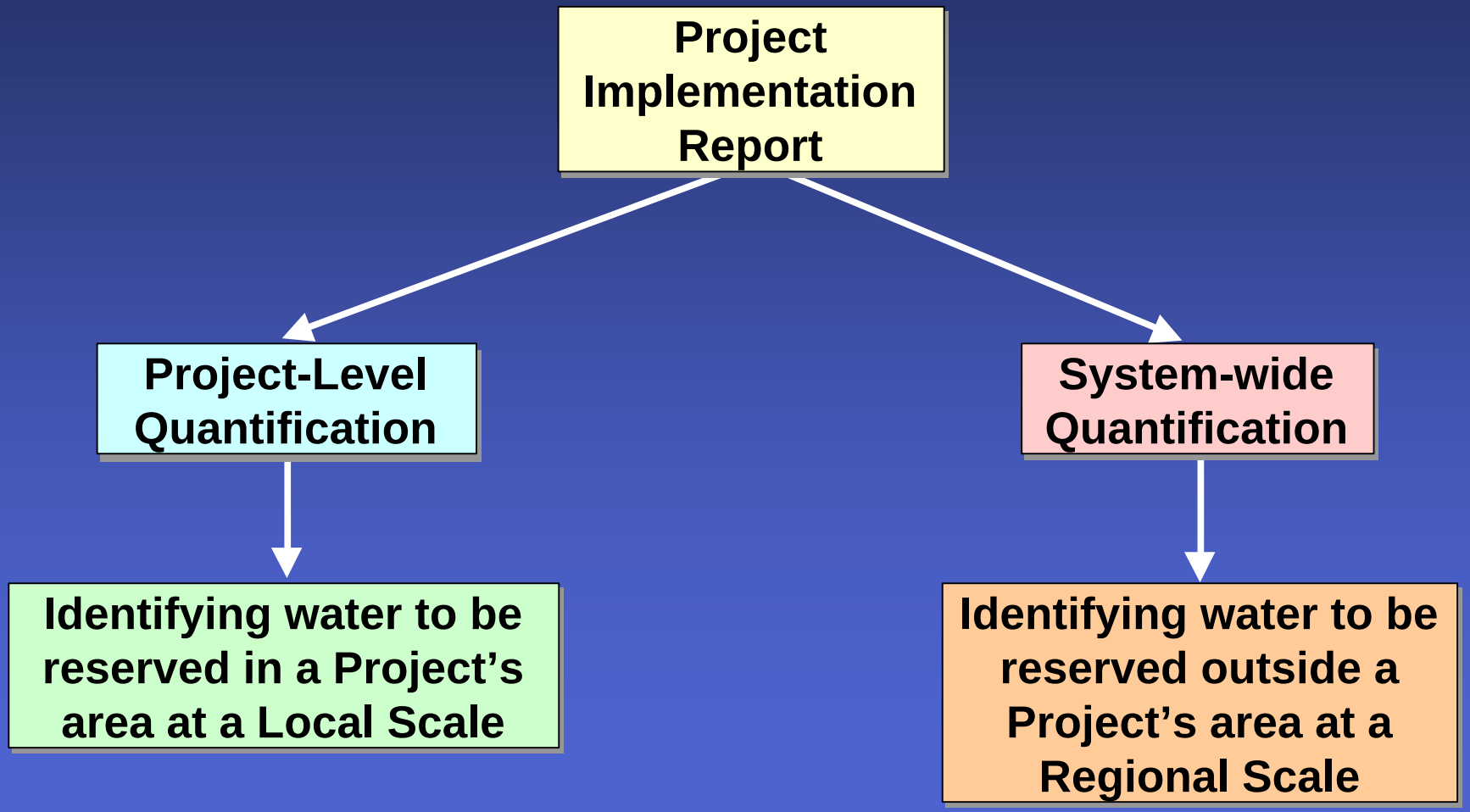


Project Implementation Report Process

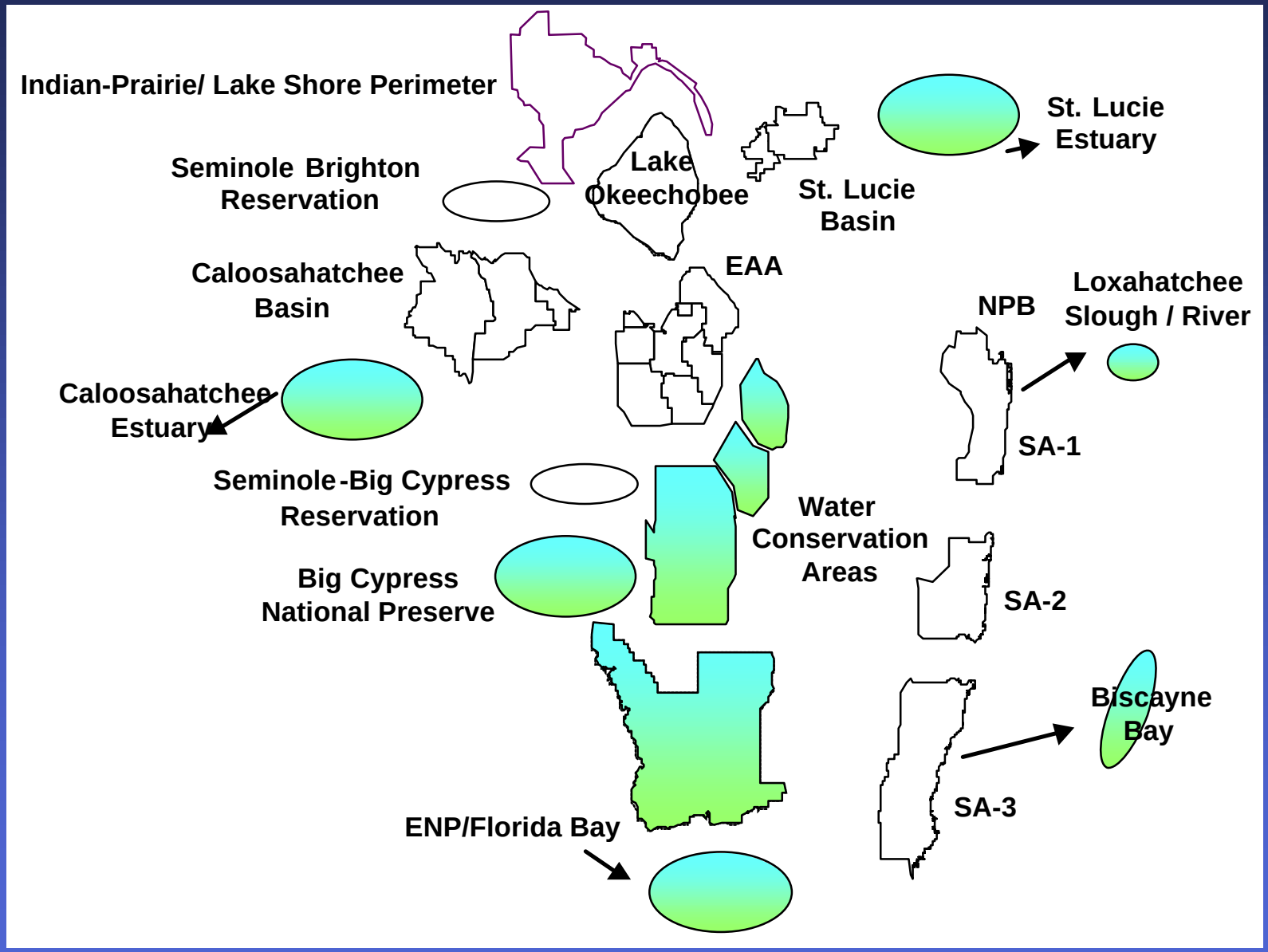
II. A. Identify water to be made available by each CERP project for natural systems and consumptive uses (con't)

- In PIR, identify CERP project water for natural system
  - Full range of hydrologic record
- Quantify on a system-wide level
- Quantify on a local level
  - Stormwater Treatment Areas
  - Wetland Systems

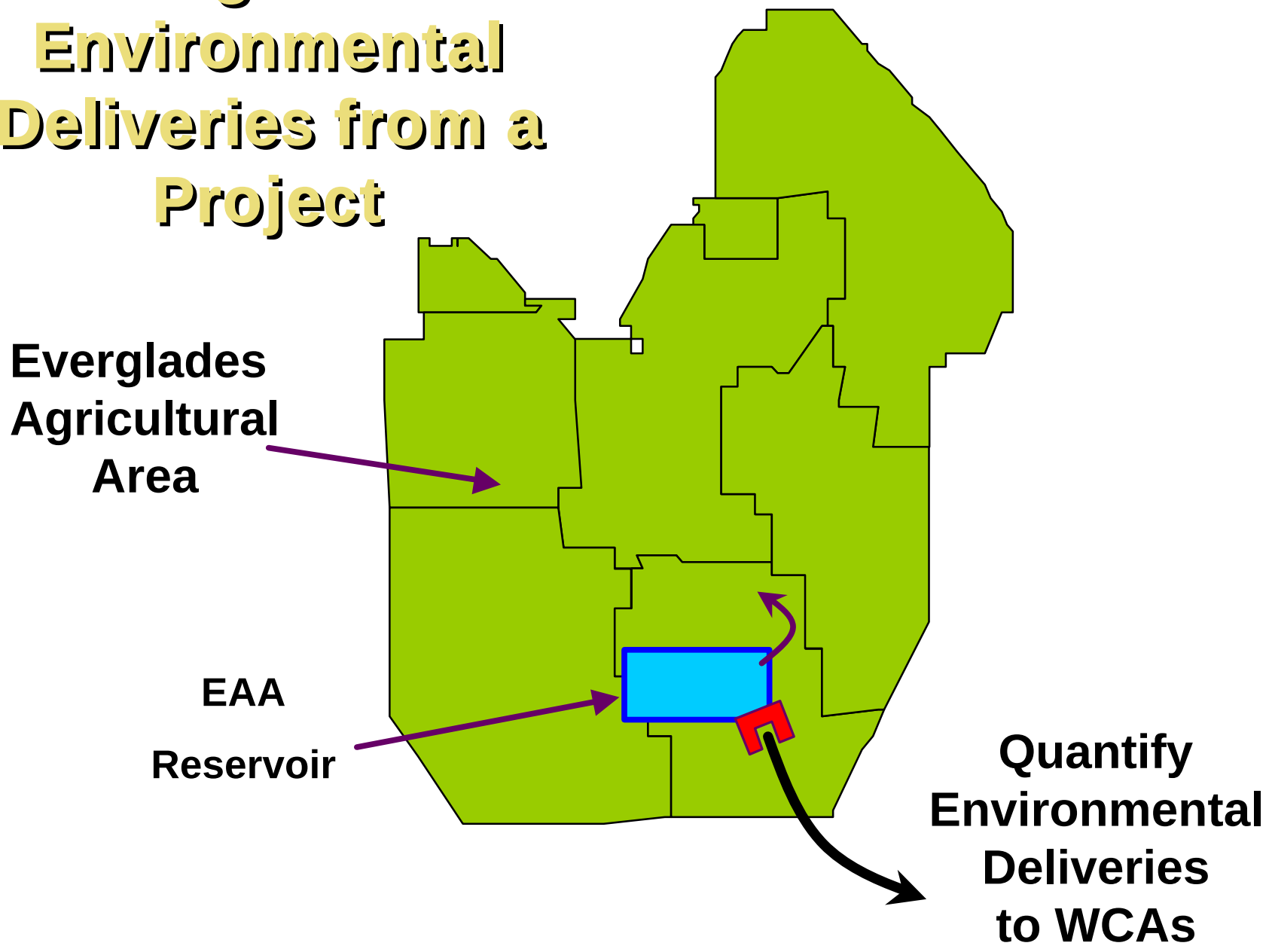
Identifying Water to be Reserved in a Project Implementation Report



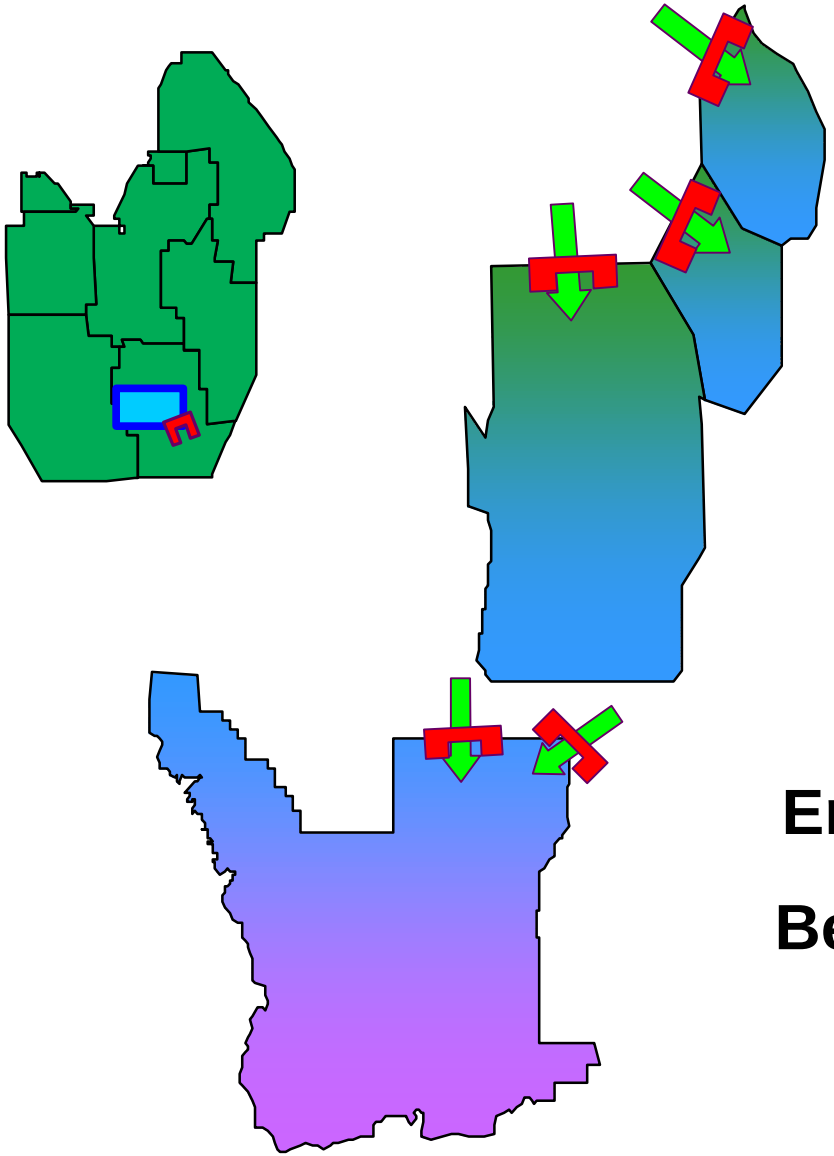
System-wide Reservation



Regional Environmental Deliveries from a Project



System-wide Benefits



Quantify

Total

Environmental

Benefit to each

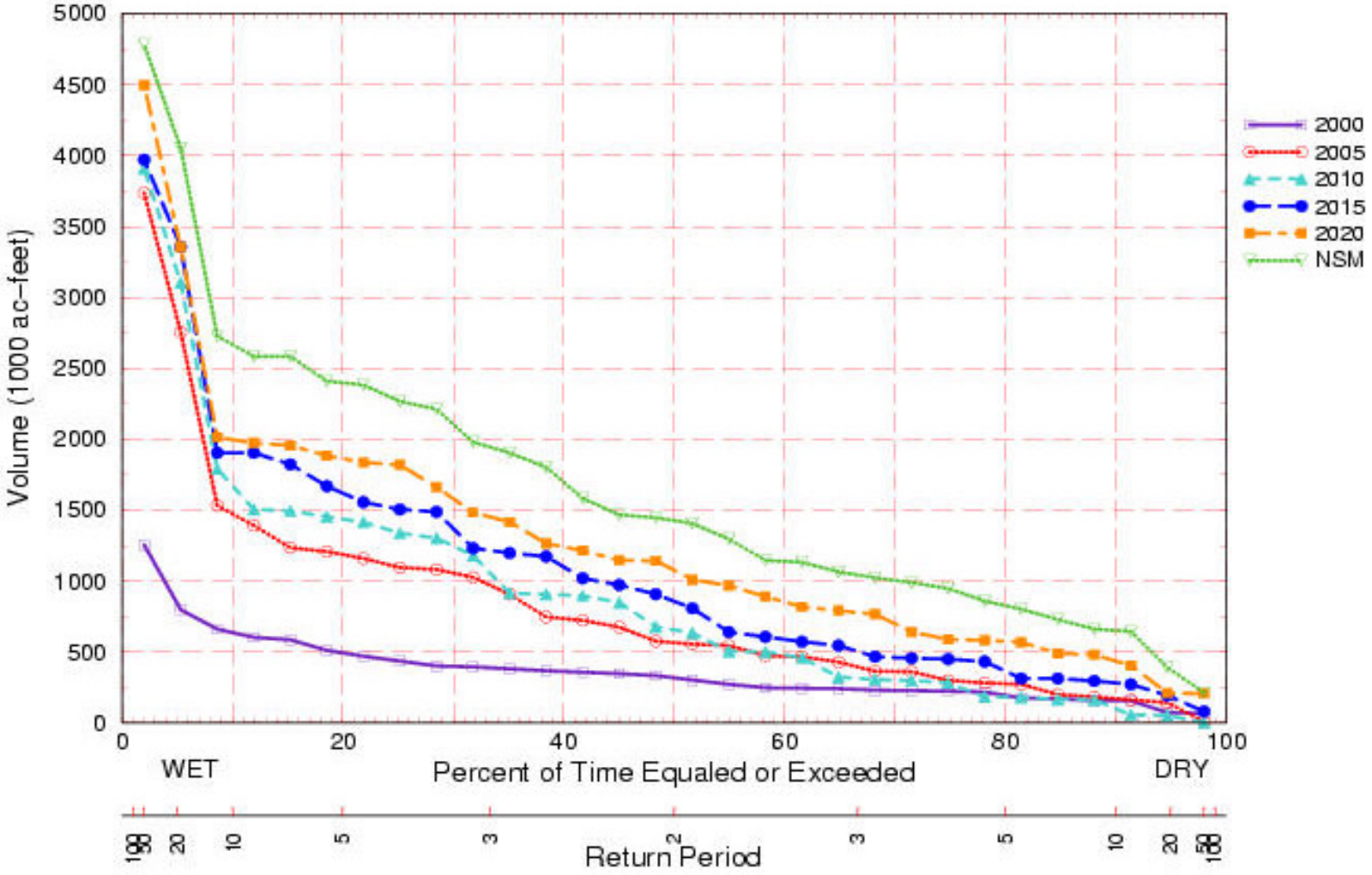
Sub-region

System-wide Reservation

- Quantification performed for three periods:
  - Annual (e.g. Water year, November - October)
  - Dry Season (November - May)
  - Wet Season (June - October)

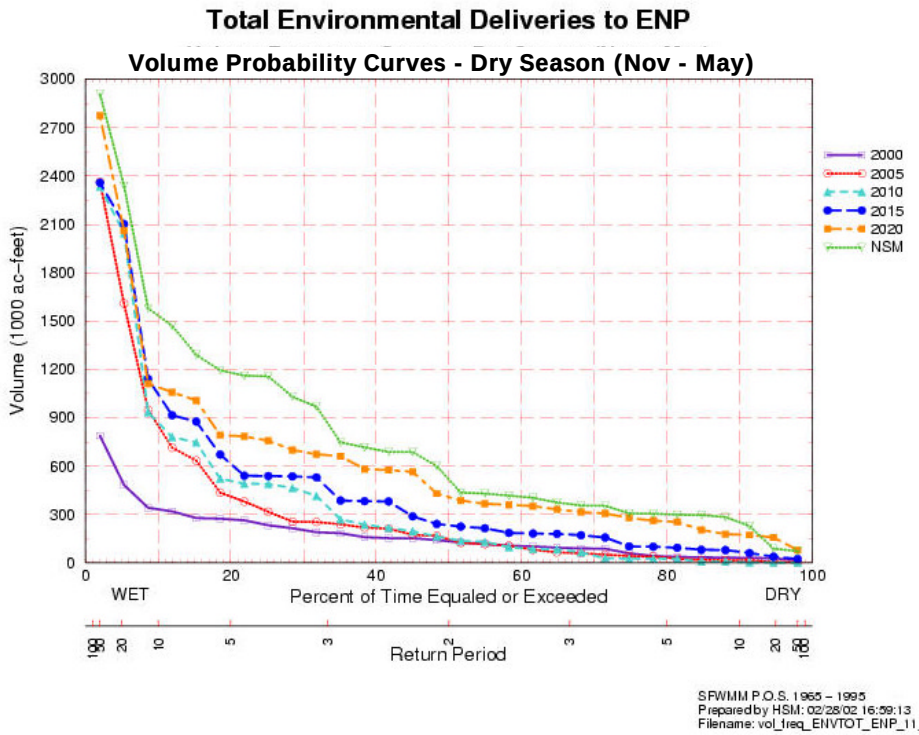
Total Environmental Deliveries to ENP

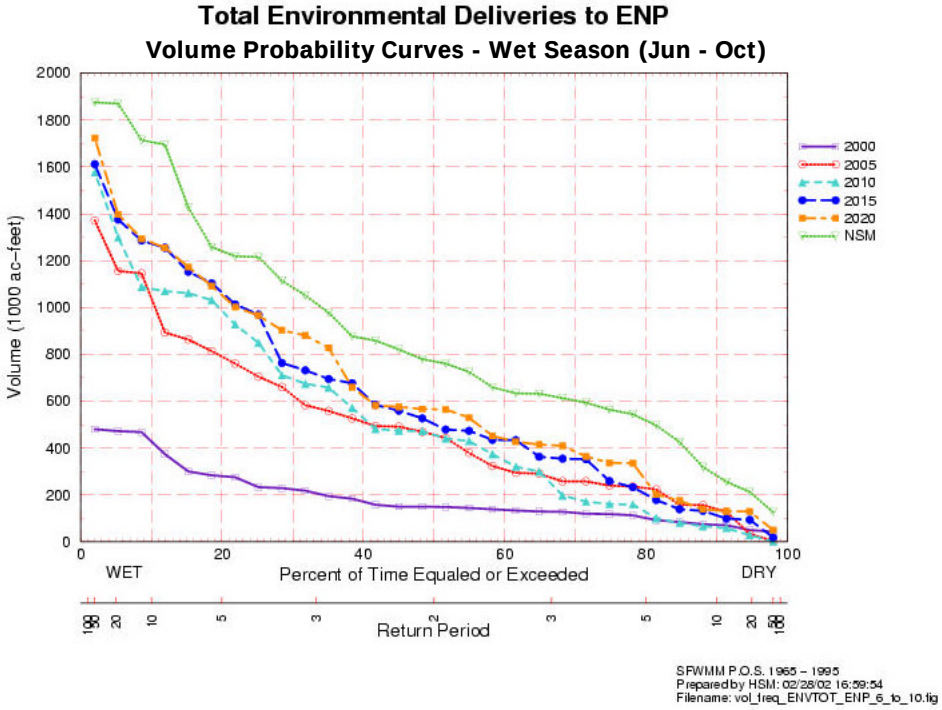
Volume Probability Curves - Water Year (Nov - Oct)



SFWMM P.O.S. 1965 – 1995
Prepared by HSM: 02/28/02 16:58:25
Filename: vol_freq_ENVTOT_ENP_11_to_10.fig

Quantification by Season





Dry Season

Wet Season

II. B. Adopt reservation to account for additional water made available for the natural system prior to PCA

- Adopt reservation with conditions based on PIR prior to PCA (conditional reservation)
- Adopt as project level or system-wide reservation
- Refine reservation based on actual project performance as determined by project operational testing and monitoring (final reservation)
- Deliver reserved water only after project is operational and consistent with operating manual

II.B. Adopt reservation to account for additional water made available for the natural system prior to PCA

- Reservation to include conditions :
  - Protect existing legal sources in reservation rule
  - Amend reservation if project performance is inconsistent with PIR
  - Reference operational manuals

II.C. Revise regional water availability rule to account for additional water made available for consumptive uses

- Identify additional water made available for consumptive uses during PIR
- Revise regional water availability rule when water is available
- RWA rule based on project performance as projected under 1 in 10 year drought event

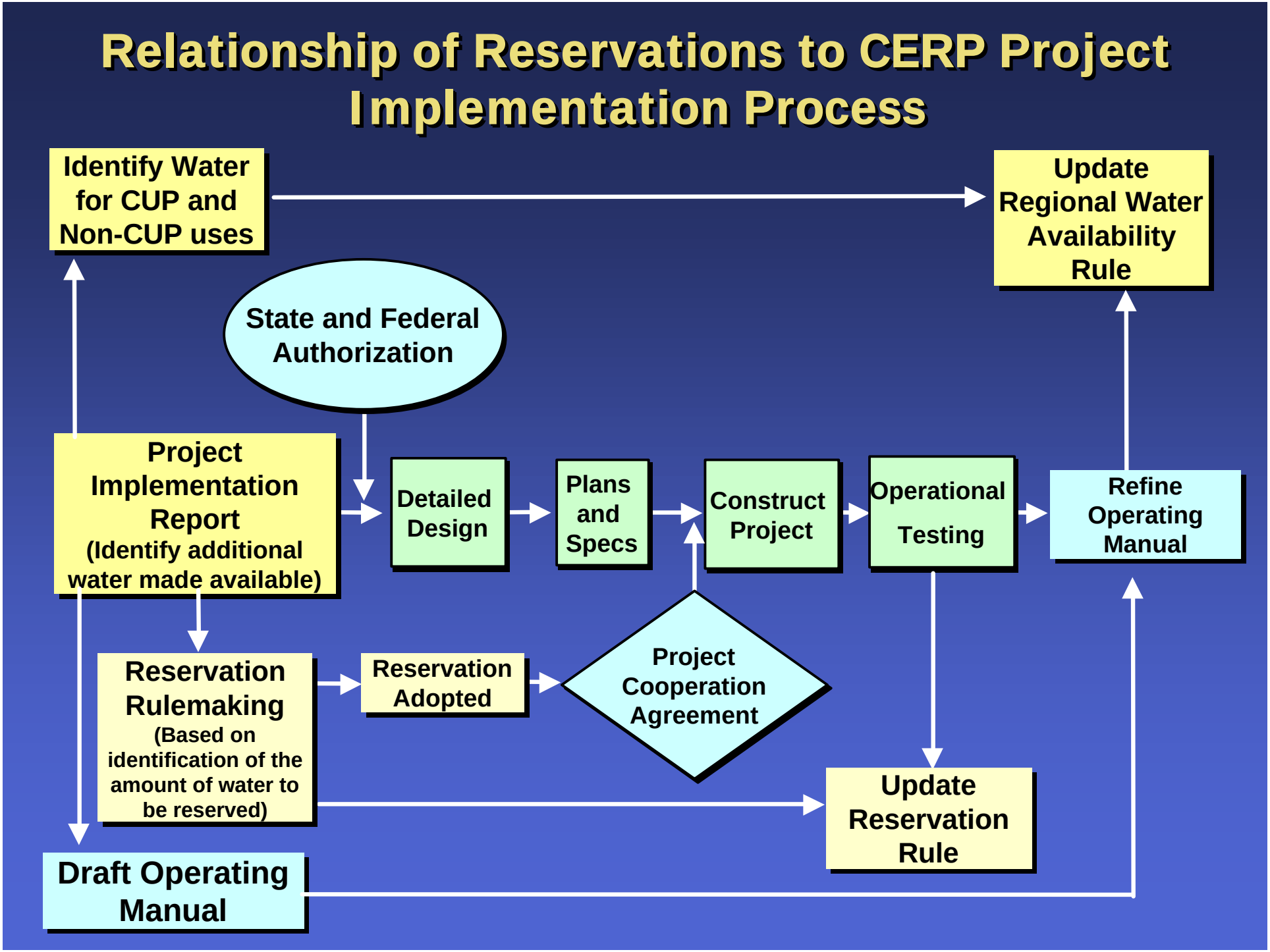
II.D. Develop linkage to water shortages and operations

- Operational linkages:
  - Operations manuals must be consistent with Reservation and RWA rules
  - Translate reservations into stage based operations & decision trees for making real-time decisions
  - Conduct annual model analysis to confirm consistent implementation of operations & reservation
  - Track system performance through RECOVER

II. D. Develop linkage to water shortages and operations (con't)

- **Water Shortage Linkage:**
  - Identify considerations on how to distribute water for competing needs during water shortage
  - Governing Board process
    - Public Health and Safety
    - Fish and Wildlife
  - Provide linkage with operating manual

Relationship of Reservations to CERP Project Implementation Process



Summary

II. How to protect water made available by CERP for natural systems & other water related needs

- Major Topics:

A. Identify water made available by each CERP project for natural systems and consumptive uses

B. Adopt reservation to account for additional water made available for the natural system prior to PCA

C. Revise regional water availability rule to account for additional water made available for consumptive uses

D. Develop linkage to water shortages and operations


Discussion

Introduction: Why we are here

State and Federal Mandates

State Implementation Tools

Primary Policy Issues

Summary and Schedules

Summary and Schedules

Schedule of State Commitments:

- **Reservation white paper revised and distributed for public comment (June 2002)**
- **Begin public workshops on reservations methodology (July 2002)**
- **Complete CERP 2000 Base Case (2002)**
- **Identify existing legal sources (2003)**

Summary and Schedules

Schedule of State Commitment (con't):

- Develop and adopt Regional Water Availability rule (2003)
- Develop and adopt initial reservation for rainfall driven deliveries (2004)


Discussion